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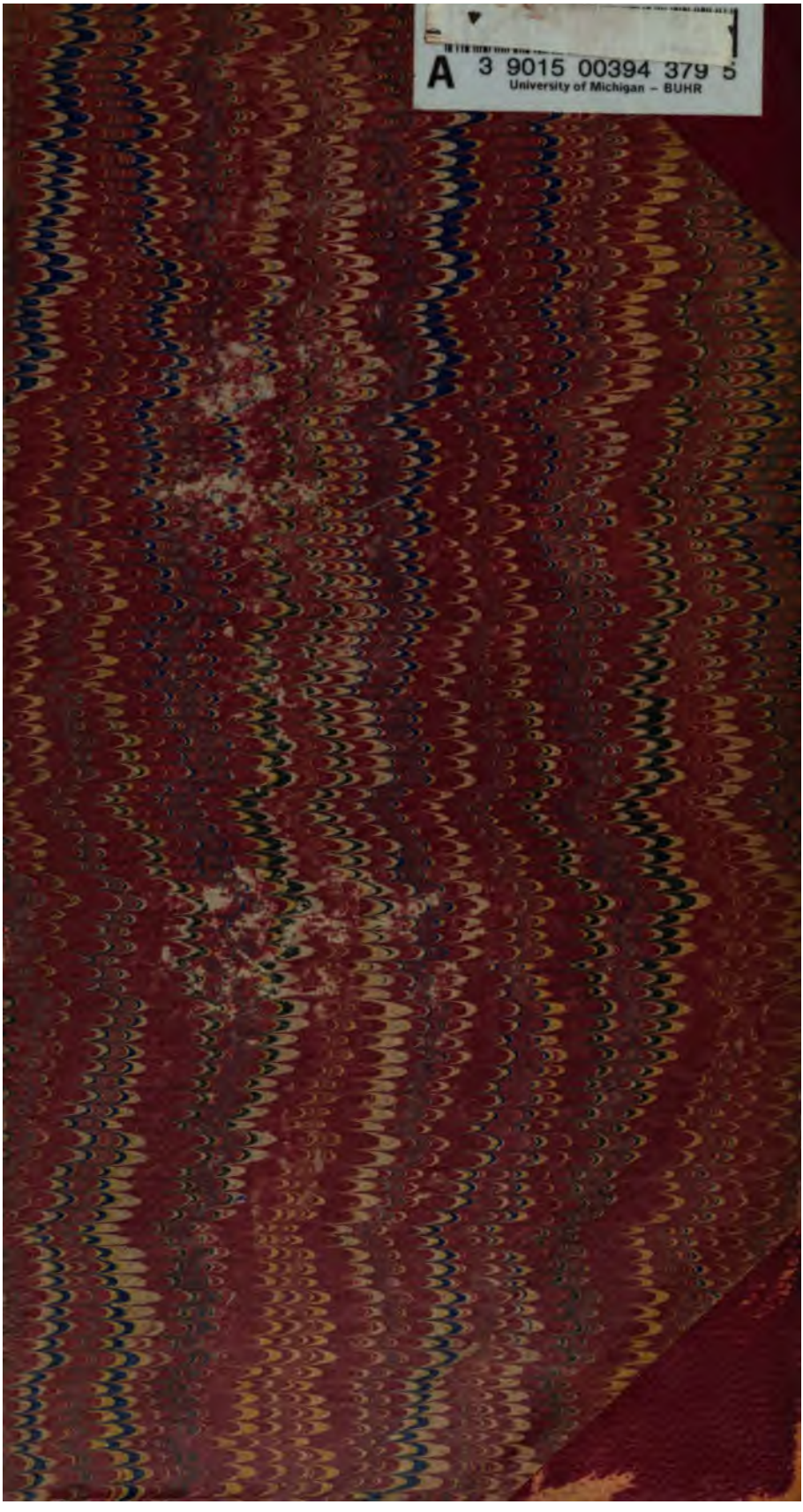
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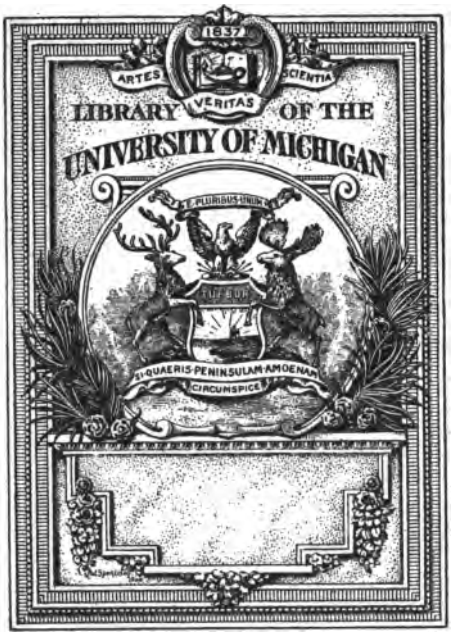
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CAMBRIDGE ESSAYS.

THE CHARACTERISTICS OF ENGLISH CRIMINAL LAW.

WHEN Sir Matthew Hale made the Crown Law his principal study, he was led to do so, we are told, by 'a compassionate concern for the lives and liberties of mankind on the one hand, and for preserving the public peace on the other;' and it would seem to most persons almost pedantic to notice formally the fact, that the subject of Criminal Law is one of much importance. Amongst lawyers, however, it is unquestionably true that neither its study nor its practice is in high repute. The discussion, whether men are to be forcibly deprived of their liberty, their property, and, in some cases, of their lives, cannot indeed, by the most frivolous or cynical, be considered as otherwise than serious; but the low professional estimate of this branch of legal business is perfectly natural, and, indeed, almost unavoidable. The great bulk of the criminal business of the country is of the most petty kind, and is transacted before courts which the most ardent imagination cannot invest with impressiveness. The questions at issue are generally the very narrowest and simplest; the counsel engaged in them are either beginners, to whom it is an object to acquire familiarity with the routine of procedure and the practical application of the common rules of evidence, or they are men who will never rise above the lower ranks of their profession, and who supply, by a certain keenness acquired by practice, and the exercise of a natural gift of fluency and plausibility, the absence of any very deep knowledge of law, or of any very extended education. Of course, there are frequent exceptions; but such is not unusually the character of those who exercise this branch of

the profession of the law. The ordinary routine of business at a Court of Quarter Session would be something as follows:—A. B. is accused of stealing a pair of boots—the prosecutor swears they were safe on Monday morning, and a pawnbroker, that the prisoner pledged them on Monday afternoon. The prisoner says he found the boots. C. D. is accused of obtaining books worth ten shillings from a shopkeeper, by falsely pretending that somebody else had sent him for them. The shopkeeper proves the pretence and the delivery of the books, and another witness negatives the sending. The prisoner says, 'You're a false man,' or, 'You're not the witness of truth.' E. F. is indicted for an attempt to rob G. G. swears that he was walking home, when he met two men, who began abusing him; one of them challenged him to fight, and the other, being the prisoner, tripped him up, and kicked him when he was down. He heard some one say, with an oath, 'Knock his brains out.' Both were on him at once. Such a case is probably defended, and the defence is so uniform, that nothing would be easier than to write out the whole proceedings at length. The great point of it always is, that the prosecutor had been at a great many different public-houses on the night in question, and was so drunk that he did not know what happened. He generally has to admit that he was not quite sober; and there are a set of smart sayings about the difficulty of understanding the state of a man who was neither drunk nor sober, which, like the Common Law itself, may almost claim the veneration due to a universal and immemorial tradition.

It is not surprising that many persons should shrink from passing years in witnessing and taking part in such scenes; and it must be added, that the fees paid both to counsel and attornies for transacting criminal business are extremely small. Indeed, though there can hardly be a more difficult or delicate task than that of conducting a complicated prosecution, the great majority of cases are so plain and short, that they may safely be entrusted to the most ignorant or incompetent; briefs in them are, in fact, given away either by rotation or by favour. The consequence is, that, except in political trials, or in cases of a very grave character, such as the more aggravated class of murders, or in those which are of a semi-civil nature—as criminal informations for libel or assault, fraudulent bankruptcies, extensive embezzlements, or great mercantile frauds—it is very uncommon for men eminent either as barristers or as attornies to enter a criminal court.

When, however, we have divested our minds of these impressions, the real gravity of the subject becomes so apparent, that if it is not recognised at once, it can never be perceived. The moral significance of deliberately branding a

fellow-creature with an indelible stigma, of blasting his prospects for life, of exposing him to something like the certainty of utter moral ruin, and, in certain cases, of deliberately, wilfully, and publicly killing him, is such that it would be simply impertinent to illustrate or to enlarge upon it. I propose, in the present paper, to give an account of some of the principal features of the system by which this awful national duty is discharged. It requires but a very slight acquaintance with any part of the law of England to disabuse a man of the illusion that what he may write upon such a subject can have any technical value; but though it would be impossible, within moderate limits, to enter into details sufficiently minute to interest or to instruct legal practitioners, it is not impossible to draw an outline of the general structure, character, and procedure of the Criminal Law, which, if free from gross error, will be neither uninstructive to general readers, nor altogether uninteresting to members of the profession.

The law of England is composed of three principal branches, of very unequal authority. These are, Statutes, Reports, and Text-books. The Statutes begin from Magna Charta (9 H. III.), and extend to the present year. The Reports are records of the decisions of the Courts upon particular states of facts, involving sometimes a more or less distinct enunciation of the principles upon which they proceed. Including the early series, called the Year-books, they cover a period extending from the reign of Edward II. downwards. The Text-books, of which Bracton is, perhaps, the oldest now in credit,* were written by a variety of private authors, from the reign of Henry III., and are of all shades of value,—the opinions of Littleton, Coke, Sheppard, and some other writers, being of almost as high authority as the express enactments of Parliament; whilst others—especially the later ones—neither have, nor claim, any independent weight, and aim merely at the merit of being indexes, more or less accurate and convenient, to works of authority.

These depositories contain two different kinds of law, known respectively as Common and Statute Law. The Statute Law consists of Acts of Parliament, and the Common Law comprises a number of old traditions, long since reduced to writing by a variety of text-writers, and a series of judicial expositions and comments on every branch of the law, con-

* Bracton wrote *Temp.* H. III., and has frequently been quoted in modern times. Glanville, who wrote *Temp.* H. II., is, I believe, considered rather out of date.

tained in a great number of reported decisions upon particular states of fact. I may observe once for all—what must be obvious enough to any one who impartially considers the subject—that the power which the Judges possess of pronouncing, with authority, which of several views upon a particular subject is the true one, and what are the principles to be followed upon questions arising for the first time, is a qualified power of legislation. The Criminal Law may, therefore, be said to consist of two branches, of which each is subject to increase by a species of legislation proper to it; the Statute Law, by the unqualified legislative powers of Parliament; the Common Law, by the qualified legislative power entrusted to the Judges. I will endeavour to draw a very broad outline of the relation of these branches to each other, and of the separate provinces with which each of them is concerned.

The earliest notions on the subject of crime are so very obvious as to be almost universally adopted. Probably, every country in which there is anything approaching to civilization agrees in punishing the intentional destruction of life, the infliction of wounds, the appropriation by one man of the goods of another, certain outrages against women, burning houses, and some forms at least of what in ancient times was called *crimen falsi* — such, for example, as perjury, cheating, and the simpler kinds of forgery. In early times it was supposed to be an easy thing to give sufficiently plain descriptions of these offences for the purposes of justice; and, no doubt, where it is possible to decide every case on its own merits, without creating a precedent by the decision, there would not be the same difficulty in the undertaking as there is at present. Such general descriptions are still to be found in Bracton and other ancient writers, who, for the most part, copied his statements.* By degrees it was found that there were large classes of crimes which the course of society developed, and for which such definitions did not provide. Acts of Parliament were accordingly passed, from time to time, to punish them. This accounts for one large class of our penal statutes. A further discovery was, that the loose descriptions of crime which passed for definitions left great gaps in the law if they were strictly construed; and this gave rise to an immense crop of judicial decisions, explaining, adding to, and distinguishing from, the descriptions in question, in the hope of stretching

* Such was Bracton's authority, that Staundford's Pleas of the Crown, written in the 16th century, are little more than an annotated Bracton, with later statutes and cases, as a lawyer would now say, 'entered up.' —4 Reeves' *Hist. Eng. Law*, 566.

the old phrases to meet new circumstances, without the assistance of the legislature. The ancient definitions, as explained by judicial decisions, were called 'the common law,' 'the unwritten law,' 'the general custom of the realm,' and so forth—partly because tradition once really had some connexion with them, partly because the use of such phrases concealed the fact that the Judges in reality made, though in form they only declared, the law. This system, though rude and imperfect in some particulars, and though arbitrary and technical to a very high degree in others, was very little interfered with by Parliament till very modern times indeed. The 25 Edw. III., which gave an authoritative exposition of the Common Law, as to treason, is almost the only instance in early times of an interference by express enactment with the course of judicial decision. Indeed, the discretion of the Judges was anciently so much more extensive than it is at present, that legal anomalies caused less practical inconvenience, and attracted less attention, than has since been the case. People, too, were more inclined to look upon law as a science, which had its own necessities and difficulties like mathematics, and were less alive to the fact that we can make what laws we please. Sir Michael Foster's discourses on Crown Law, and especially his attempts to reduce the distinction between murder and manslaughter to reasonable principles, are excellent illustrations of the manner in which a very able mind, familiarly acquainted with the technicalities of its profession, struggled to put a reasonable construction upon obsolete, unmeaning, or absurd distinctions.*

The result of the whole is, that till within the last thirty years the law consisted of descriptions of the commoner kind of crimes, partly very ancient and partly modern, but forming in the aggregate a coherent system—very incomplete, no doubt, and far from being reasonable where it was complete. The Statute Law upon the subject was a vast mass of enactments affixing punishments—generally the punishment of death—to all sorts of acts, with no regard whatever to genus or species.

This state of things attracted considerable attention, principally in consequence of the writings of Jeremy Bentham; and within the last thirty years many efforts have been made to consolidate and simplify the Statute, and to regulate the Common Law. They have, however, been marked by so curious a want of system, that the two branches of the law are mixed together in a manner of which nothing but illustrations can give the least conception. Goods were classified, for example, at Common Law as being either *choses in possession*

* Foster's *Crown Law*, Discourse II. ch. v. and viii.

or *choses in action*—the latter class comprising such moveables as the owner had a right to possess, though he had not the custody of them. Thus a watch is a *chose in possession*—money due, a *chose in action*. It was held to be essential to the crime of theft that a man should deprive another of the possession of his goods, and hence it followed that *choses in action* were not the subject of larceny.* This was obviously the rule of a rude age, in which there was very little personal property; but it was adhered to even after bills of exchange, bank-notes, and other *choses in action* (for a bank-note is only evidence of the holder's claim on the bank), had become common; and in order to avoid the inconvenience arising from the fact that such writings were not the subject of larceny, Acts were passed (of which 7 & 8 G. IV., c. 29, s. 5, is now in force) by which it was made felony to steal 'any talley order or other security whatever entitling or evidencing the title of any person or body corporate to any share or interest in any public stock or fund, whether of this kingdom of Great Britain, or of any foreign state, or in any fund of any body corporate, company, or society, or to any deposit in any savings' bank, or' to 'steal any debenture, deed, bond, bill, or warrant, order, or other security whatsoever, for money or for payment of money, whether of this kingdom or of any foreign state, or any warrant or order for the delivery or transfer of any goods or valuable thing.' The law therefore now stands thus: *Choses in action* are not the subjects of larceny by Common Law; but almost every sort of *chose in action* which has a material existence is the subject of larceny by statute. The law, as a general principle, forbids the use of any one of the ten cyphers; but by express enactment it allows every one to use 1, 2, 3, 4, 5, 6, 7, 8, 9, or 0, when he has occasion. It is really no exaggeration to say that the ingenuity of the Legislature has been racked to reduce the Common and Statute Laws respectively to the position of the clauses of the famous Highgate oath—never to drink water when you can get wine, unless you like drinking water better. Unfortunately, though it is comparatively easy to use so general a phrase as '*chose in action*,' it is very difficult to count up the whole of its component parts so as to be able to deny of each of them individually what you have affirmed of all collectively; and inasmuch as the exception does not quite exhaust the rule, it still applies occasionally. It was a question, for example, whether a post-office order was within the statute;† and it has been held that

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* 4 Step. *Com.* 184. Another reason was, that they were of 'no value.'

† *R.* v. *Gilchrist*, 2 Moo. *Cr. Ca.* 223.

an unstamped cheque not made payable to bearer is not.* This instance affords a good illustration of the existing relations between Common and Statute Law. The Common Law lays down a broad and bad principle—the Statute Law deprives it of force in every particular case that occurs to the draughtsman of the bill; but as it is no easy matter to give an exact equivalent of one general term in many terms less general, there always remains a certain debateable land between the rule and the exception intended to repeal it, which furnishes a large proportion of those anomalies and absurdities with which English law is so often reproached. It is a fanciful but not quite inappropriate comparison to say that the juncture between the Common and Statute Law is something like the moraine between a glacier and its bank. Each has its own structure and its own irregularities; but the juncture of the two opposes to progress the combined difficulties of rock, mud, ice, and crevasses.

When we pass from the relation of the two great branches of the law to their specific peculiarities, we find ourselves upon clearer ground. What remains of the old Common Law is circumscribed within very narrow limits, and may be described as consisting almost entirely of principles and definitions. The principles of the Common Law relate mostly to certain broad preliminary questions which apply equally to all crimes, whatever may be their nature. A very good notion of their general objects may be obtained from the early chapters of the *Code Pénal*, or the *Code of Louisiana*. Taking the former of these as my guide in the distribution of the subject, I will briefly indicate their scope.

The preliminary dispositions of the French code classify offences as *crimes*, *délits*, and *contraventions*, according to the gravity of the punishments which they incur. The classification into treasons, felonies, and misdemeanours of the English law is a Common Law classification, but it is curiously anomalous and unmeaning. An attempt to murder was at Common Law only a misdemeanour, whilst to steal twelvepence was a capital felony. Statutory provisions have increased this confusion; for it is a felony to embezzle, and a misdemeanour to obtain goods by false pretences. Another of the preliminary dispositions of the *Code Pénal* regulates the guilt of attempts to commit crimes. This matter depends with us partly upon the Common Law, the rules of which relating to it are very obscure, but the question itself is one of the greatest difficulty. The first book of the *Code Pénal* enumerates and classifies punishments. This subject is amongst us regulated

* *R.* v. *Yates*, Ry. & Mo. 170.

almost entirely by statute; the fines and imprisonments inflicted for misdemeanours or contempts are almost the only Common Law punishments now in use. The second book of the *Code Pénal* relates to the responsibility of infants and lunatics, and to the law of principal and accessory. These subjects are regulated amongst us principally by the Common Law, and form nearly its most important title; but the most important branch of all is undoubtedly that which relates to procedure, including the rules of evidence.

It would be impossible to characterize in a few words principles of so wide an application. The entire want of any reasonable classification of crimes or punishments is, I think, a very great defect in the law, though it must be admitted that so many considerations are connected with the whole subject of legal punishment, that it is impossible to look upon it merely from a legal point of view. Crimes, however, might be advantageously and easily classified, and some not inconsiderable anomalies* would be removed in the process. The law which regulates the responsibility of those who, in the broad legal sense of the words, are '*non compotes mentis*,' rests, I think, upon a very sound principle indeed, with which it would be most disastrous to tamper. Perhaps the most curious instance upon record of the substantially legislative character of the force which we give to judicial decisions is to be found in the fact that the whole law upon this subject is regulated by the answers given by the Judges, in 1843, to certain questions referred to them by the House of Lords, in the case of M'Naghten, the assassin of Mr. Drummond. The law of principal and accessory, on the other hand, is in some of its features exceedingly harsh. For example, if several persons are engaged in a common design to pick a pocket, and in its execution one of them murders the person to be robbed, all are guilty of murder. I shall fully consider the merits of the Common Law procedure and rules of evidence hereafter.

Besides the Common Law principles, there are still in use a considerable number of Common Law definitions of crimes. Indeed, that system still exercises very great influence upon the legal conceptions of all the commoner offences. I have already given an illustration of the sort of relation in which the old definitions stand to the new enactments; but the definitions themselves, which the statutes explain, have various special peculiarities which must be studied by any one who wishes to appreciate English Criminal Law. It has

* Such, for example, as the forfeiture incident to felony, and the right of challenging jurors denied to misdemeanants.

become fashionable to speak of the English mind as being a stranger to refined speculation; but, amongst the numerous contradictions of this view which experience supplies, none is more remarkable than that which is conveyed by the history of English Law. It would be much more like the truth to say that in this department of knowledge the principal defect of the English mind is the habit of over-refinement. The wonderful interpretations given to the apparently simple language of the Statute of Frauds, the whole of the system of special pleading which grew up under what were called the New Rules, and the strangely-distorted feats of ingenuity which are still to be seen in Fearne's *Contingent Remainders*, are standing illustrations of this truth. None, however, are more curious than those which are to be found in the Common Law definitions of crimes. There is a distinction in kind between the view which is taken of crimes by the Common and by the Statute Law. The Common Law originally aimed at being a philosophical system; and, though the principles of logic, morality, and politics on which it reposed are now to a great degree exploded, its ancient character still clings to it so far that its definitions are, for the most part, generic and not specific. The Statute Law, on the other hand, hardly ever aims at generic definitions, but confines itself almost entirely to the creation of specific offences. For example, the Common Law gives a generic definition of theft. The Statute Law creates the particular offence of stealing in a dwelling-house above the value of five pounds, and affixes to it a specific punishment. The Common Law contains a general definition of forgery;* but the Statute Law† has specified so many varieties of forgery, such as the forgery of Exchequer-bills, deeds, dividend-warrants, &c., that the offence of forgery at Common Law has been nearly superseded. Indeed it would require great ingenuity to commit it, without committing at the same time a statutory offence.‡ The principal crimes to which Common Law doctrines still apply are, as might have been expected, those which are common to all nations and to all states of society. Theft and homicide are the most important, and the definition of each of them supplies most characteristic illustrations of the genius of the system. If it were desirable to characterize them in a few words, I should say that the specific peculiarity of Common Law definitions of crime is, that having been originally descriptions, they have been manipulated into definitions. The

* 2 Russ. *Cri.* 318. † 11 G. IV. and 1 W. IV. c. 66.

‡ Whilst these sheets were passing through the press, the problem was, perhaps, solved by a man who forged the name of an eminent artist on the back of a picture to increase its value. A case was reserved to determine whether the solution was sound.

oldest definition of theft still in force is that of Bracton—*Furtum est secundum leges contractatio rei alienæ, cum animo furandi, invito illo domino, cujus res illa fuerit;** and after various extensions and adaptations by Coke, Hale, and others, it was defined by East as 'the wrongful or fraudulent taking and carrying away by any person of the mere personal goods of another, from any place, with a felonious intent to convert them to the taker's own use, and make them his own property, without the consent of the owner.' It is obvious that the '*animus furandi*' in the first, and the word 'felonious' in the second of these definitions, entirely destroy their value, because they introduce into the definition the term to be defined. It must, however, be remembered that Bracton wrote long before there were reports, and whilst the law was really in a great measure traditional; and indeed it is obvious from the whole tone of his book that he aimed at nothing more than a description of the system which he saw in action. His account of theft is instructive enough, if this is borne in mind. Its deficiencies, considered as a definition, were no doubt speedily discovered, when in the natural course of events it came to supersede the authority of oral tradition. Incidents were then grafted upon it, and technical meanings affixed to its different members, in order to adapt it to particular cases, and it thus grew by degrees into the cumbrous and, to the ordinary reader, utterly unintelligible definition which I have quoted from the modern author. Who, for example, would understand that by a 'taking,' Sir John East understood a taking out of the owner's possession, which possession might be actual or constructive, and that, if the owner delivered the goods to the thief as his servant, he did not divest himself of the possession, whereas, if he delivered them to him not as servant but as baillee, he did; and that, therefore, if a servant sent out to exercise a horse rode off with him, he would transfer him from his own possession *quâ* servant (which was the master's possession) into his own possession *quâ* thief, which would be larceny; but that if, on the other hand, a man gave a carrier a parcel of goods to carry, he parted with the possession of them—so that if the carrier appropriated them, he would not be guilty of theft unless he cut open the parcel and stole part, in which case he would, because, though the possession was transferred, it was only the possession of the parcel as given and not the possession of its contents, however arranged. All this learning is contained in the word 'take,' and there is almost as much in the word 'feloniously,' and not a little in the words 'carry

* Brac. fo. 150 b.

away.' Lord Burleigh certainly nodded his head to much less purpose.*

The history of the famous words 'malice aforethought,' in the definition of murder, is very similar. 'Aforethought' is a word to which it is impossible to attach any meaning at all which is not absolutely universal. No act is ever consciously done which is not done of some motive 'aforethought,' for the intention must precede the act; and whether it precedes it by a second or by a year, it equally precedes it. Malice, also, is a word of the vaguest kind, and its legal interpretation makes it almost unmeaning, for it may be either express or implied; and the Judges seem from time to time to have determined to imply it whenever they found a case of homicide in which they thought the criminal ought to be hung, and which did not fall within the natural meaning of the definition of murder. For example, 'a man wilfully poisons another; in such a deliberate act the law presumes malice, though no particular enmity can be proved.'† So if A. kills B., meaning to kill C., the law considers that the malice '*transit in personam.*' In short, having given a forged bond, the law keeps by it a quantity of forged receipts, to use as occasion requires. If we consider the phrase 'Murder is the killing a person under the King's peace with malice aforethought' as a description of the crime, it is a good one, for it would probably characterize fairly enough the distinctive features of a very large proportion of murders; but if we look upon it as a definition, it is a very bad one indeed, for there are many murders to which it does not apply. The Judges, considering themselves tied down to the words 'malice aforethought,' stretched them, by such fictions as I have attempted to describe, to the required extent.‡

There is a strange peculiarity about the definitions of murder and manslaughter, which is, I believe, almost unique in the history of English law. The '*murdrum*' which Bracton mentions was not our murder, but was merely secret killing, and was distinguished from other homicide, not by its gravity nor by its punishment (for manslaughter was, till modern times, a capital though clergyable felony), but by the fact that it gave rise to what was called a 'presentment of Englishry,'—that is, unless the murdered man were proved to be an Englishman, and not a Norman, it was presumed that he was a Norman, and the township was fined. The only qualifications of homicide known to the ancient Common Law were homicide *se defendendo*, and homicide *per infortunium;* the modern distinction was esta-

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* *First Report of Crim. Law Com.* p. 20, &c., and 2 Russ. *Cr.* p. 25, &c.

† 1 Russ. *Cr.* 483.

‡ 2 East, *Pl. Cr.* 552-4.

blished entirely by judicial distinctions and refinements, and its intricacies and defects may therefore be considered as a palmary example of the character of Common Law definitions of crime.*

This short sketch will give some general notion of the character and scope of the Common Law in relation to crime. I will proceed to give a short account of the existing state of that part of the Statute Law which refers to the same subject. It is the special peculiarity of English Acts of Parliament to abstain from laying down general principles. They consist almost exclusively of particular provisions adapted to specific circumstances. This is specially true of the Acts of Parliament which refer to crimes and their punishments. They never lay down a principle as to responsibility, procedure, or evidence; they hardly ever define any large class of crimes; but they are full of definitions of different species of acts which subject men to punishment, and which were either not reached by the Common Law at all, or punished too severely, or not severely enough. The Statute Law on crime was, till lately, excessively intricate. It was, in fact, distributed over the whole Statute Book from the reign of Edward I. downwards. Much, however, has been done within the last thirty-five years to simplify and consolidate it, and it has the advantage of being readily accessible in a portable shape—for the statutes relating to Criminal Law have been collected and classified by Mr. Welsby in so efficient a manner, that Lord Campbell declared in the House of Lords that he never heard a statute cited in Court which was not to be found in that collection. I shall, therefore, in speaking of the present state of the statutes upon crime, refer only to this work. Omitting all the merely formal parts of Acts, and expunging repealed sections, but containing very full notes of the cases which have arisen upon the various enactments, it forms a volume, in royal octavo, of 269 pages, in which are printed, at full length, all the Acts, or parts of Acts, now in force and relating to the subject of crime, from the 1st Edward II., st. 2, to the 16 and 17 Vic., c. 121—*i. e.*, from 1307 to 1853. The number of the statutes is 156, and they belong to the following reigns:—

Edward II.	1	Anne	1
Edward III.	2	George I.	1
Richard II.	1	George II.	5
Henry V.	1	George III.	18
Henry VI.	1	George IV.	28
Elizabeth	2	William IV.	21
James I.	3	Victoria	67
William and Mary	4		

* 4 Reb. *Eng. Law*, 536.

The Act of Edward II. refers to breach of prison; those of Edward III. to treason, and juries *de medietate linguæ*; that of Richard II. to forcible entries; that of Henry V. (obsolete, but still in force)* is the 'Statute of Additions,' *i.e.*, of titles to be given in indictments; Henry VI.'s statute refers to forcible entries; Elizabeth's to the same subject, and to the punishment of perjury; the three of James I. to Popish recusants serving in foreign armies, to forcible entries, and to the abolition of the right of sanctuary; the four of William and Mary to malicious informations, trials for treason, the embezzlement of Government stores, and blasphemy; the statute of Anne also refers to trials for treason; the Acts of George I. are the Riot Act, and an Act about naval stores; those of George II. refer to perjury, to assisting prisoners to escape from prison, to the embezzlement of stores, and to impeachments for treason; the Acts of George III. relate to the following crimes: treason, the administration of unlawful oaths, inciting troops to mutiny, the embezzlement of stores, serving foreign states, libel (Lord Erskine's Act), and the disturbance of public worship. There are also two Acts which remedy inconveniences arising from the existence of such ancient local jurisdictions as Nottingham, Lincoln, and Bristol, which are counties in themselves, and one authorizing the detention of prisoners acquitted on the ground of insanity. The questions involved in laws regulating the doctrine of treason and the functions of juries in cases of libel are political rather than legal, and the same may be said of the Riot Act. The other offences which have been mentioned are unimportant, or very uncommon, except indeed perjury, as to which, it is to be observed that the statutes regulate only the punishment and procedure, whilst the crime itself—many of the incidents of which are very technical and not very reasonable—is defined by the Common Law. It may therefore be concluded that no part of our existing Statute Law upon the subject of crime in common use, and applicable to the ordinary routine of offences, with the single exception of the Act which gives aliens a jury *de medietate*, is older than the reign of George IV. In other words, our whole Criminal Statute Law has been re-enacted within the lifetime of men still young. The great subjects of Criminal Law—those which form the most important titles of the *Code Pénal* or the *Criminal Code of Louisiana*—are coining, theft, arson and other malicious injuries to property, forgery, and offences against the person.† On these subjects, the Acts of 2 William IV., c. 34,

* By 7 G. IV., c. 64, s, 19, violations of it are quite immaterial.

† Out of 25,972 cases tried in 1855, only 574 are not included under these heads.

which consolidates the laws relating to offences against the coin; the 7 & 8 George IV., c. 29, which consolidates the law of larceny;* the 7 & 8 George IV., c. 30, which consolidates the law respecting arson and malicious mischief; the 11 George IV. and 1 William IV., c. 66, amending the law of forgery; and the 7 & 8 George IV., c. 18, amended by the 7 William IV. and 1 Vic., c. 85, relating to offences against the person, contain the kernel of what may be called the working Criminal Law of the land. These six Acts contain altogether 234 clauses of practical importance;† many of them, however, merely repeal other Acts which are re-enacted, whilst others supply obvious defects of the Common Law, such, for example, as the 23rd section of the Larceny Act, which makes it a misdemeanour to steal title-deeds; or the 31st, which makes dogs, and birds, and other pet animals, the subject of larceny. It may probably be said, without exaggeration, that an Act of about 200 sections would apply to nineteen-twentieths of all the crimes tried in a year. The dispositions of the *Code of Louisiana* upon the same subjects contain, as nearly as I can calculate, 399 articles. It must, however, be remembered that these contain all the law upon the subject, Common as well as Statute Law, and that the calculation is in every way a very rough one. The remainder of the Criminal Statute Law applies principally to very uncommon offences. About ten Acts refer to treason, and four to sedition, illegal drilling, &c. Others are of a very special and peculiar character. An Act (7 William IV. and 1 Victoria, c. 36), containing forty-nine sections, regulates offences against the Post-office. The 6 & 7 Victoria, c. 40, contains, in thirty-six sections, a number of special rules about the prevention of abuses in silk and woollen manufactories. A very well-known and most useful statute, 14 & 15 Victoria, c. 100, is entirely devoted to the prevention of a number of quibbles by which offenders had escaped. It provides, for example, that if a man is indicted for embezzlement he shall not be acquitted if he is proved to have committed larceny; that coin or bank-notes may be described in indictments as 'money,' and other matters of the same kind. An Act (7 Geo. IV., c. 16) against personating soldiers at Chelsea or Kilmainham, and another

* Including horse-stealing—but see 7 William IV., c. 86—and embezzlement.

† Viz.:—

Coining	22
Larceny	87
Arson, &c.	43
Forgery	31
Person	51
	234

(14 & 15 Victoria, c. 19) against laying wood, &c., on railways, form part of the Criminal Law. Acts explaining and amending other Acts, Acts varying the amount of punishment and the treatment of offenders, and, above all, the penal clauses of Acts of a merely administrative character, combine to give the subject greater apparent complexity than it really possesses.

With regard to the merits of the law itself, as distinguished from those of its administration, it may, I think, be said that though confused, irregular, and difficult to understand in the last degree, it is substantially good enough, though it must be admitted that the most important requisites of a good criminal system are so plain and so universally admitted, that it could hardly be otherwise. The Common Law definitions are, I think, generally speaking, very bad, and some of the Common Law doctrines harsh and absurd; but the evil of bad definitions of crimes in quiet times is not a very important one to the public at large. An enormous majority of the crimes which occur would fall within the loosest definition; and with respect to the cases in which a bad definition causes a failure of justice, it really matters very little whether you punish 17 thieves per 1000, or 16 and a very large fraction. Still it is not the less true that bad definitions of crimes are a serious evil. They bring discredit on the administration of justice, and they foster a sort of fraudulent and perverted ingenuity amongst legal practitioners which is very objectionable. They also induce jurymen to tamper with their oaths. There can be no doubt that this is the case with the definitions of murder and manslaughter. They are so grossly absurd that they are not and cannot be strictly acted upon. Very many cases of murder might be cited more venial than many cases of manslaughter; and the consequence is, that in practice, murder means a crime for which the jury think a man ought to be hung, and manslaughter one for which they think he ought not to be hung. Unless we are prepared to contend that the jury ought, in every instance, to assess the guilt of the prisoner according to their own views of the case, this cannot be regarded as a slight evil. It may be impossible to produce a definition which will entirely exclude hard cases; but there can be no doubt that, though the line can never be drawn perfectly, it might be much better drawn than it is with us. It must also be remembered that, in unquiet times, a loose definition of crime may shake the foundations of society. When Hastings hung Nuncomar, he used the law for a purpose for which it was never designed. Cases might well be imagined in which a partial jury and a vindictive Government might hang an innocent man for murder

without departing in the least degree from the law.* Coroners' juries have more than once found verdicts of wilful murder against soldiers or policemen in times of popular excitement;† and there can be no doubt at all that the law is so loose upon the subject that cases might occur in which such conduct would involve the Courts and the Government in the most serious embarrassment. It would be no light thing to pardon a political partisan who was clearly a legal murderer, on the ground that the law of murder is absurd, and that juries had, as a general rule, had the good humour to perjure themselves so far as to call such offences manslaughter.‡

It would be impossible to obtain any general view of the character of English Criminal Law without some acquaintance with the character of its component parts, but the attainment of such knowledge is merely a means to understanding the general character of its present administration; for the whole system would be most unfairly judged if the unquestionably irregular and confused outline of its doctrines were looked at, to the exclusion of all consideration of the manner in which they are brought to bear upon the actual transaction of business. It is only from a personal acquaintance with the transactions of criminal courts, or from an attentive and intelligent study

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* A. slaps B. in the face, B. stabs him; this is manslaughter. A. shoots at a fowl, intending to steal it; one grain of shot hits B., who dies of lockjaw a month after; this is murder. The fowl, instead of a hen, is a wild partridge; it is manslaughter. A., B., C., D., and E. are stealing apples; F., the owner of the tree, collars A., who resists. B., C., D., and E. throw stones at him, and the stone thrown by D. kills him; this is murder in all five. A. has reason to think that B. has seduced his wife; runs home, finds some evidence (though not conclusive evidence) of the fact, and stabs B.; this (per Watson B., *R.* v. *Davies*, Liverpool Summer Assizes, 1857,) is 'manslaughter of the lowest degree.' See 2 Russ. *Cr.* Bk. III. ch. I, and 4 *Rept. on Cr. Law*, xxviii. &c.

† As in the case of the Six-mile-bridge rioters.

‡ The question whether it would be possible to improve the law by codification is one which is naturally suggested by the foregoing observations; but it is so extensive, and has been so fully discussed by others, that I prefer not to enter upon it. I may be allowed to make a single observation upon one detached part of the subject. It is usually denied by the opponents of codification that that process would popularize the knowledge of the law. In the course of a tour which I made some time since in Switzerland, I used frequently to ask my guide (a Savoyard, who therefore lived under the Code Napoleon) various questions about the punishments of particular forms of robbery, smuggling, and so forth. He answered them with surprising readiness and detail, though they would have puzzled most English lawyers. I would also advise persons who make the objection in question, to compare the law of French novelists with that of English novelists. Balzac, Bernard, and George Sand are infinitely superior to any English novelists (except Scott and Fielding) with whom I am acquainted in this respect.

of reports of their proceedings, that it is possible to form any opinion upon the subject worth having.

It is necessary, in order to understand any system, to consider the object which it proposes to accomplish; and it may be asserted with respect to Criminal Law, that the choice lies between two views of it. We may consider a criminal trial either as a public investigation, having for its object the ascertaining of the truth with a view to the infliction of punishment; or as a private litigation between two persons, one of whom tries to persuade the Judge that the other falls within a class against which the law has denounced certain punishments. These two views may, for the sake of distinctness and shortness, be called the inquisitorial and the litigious theories; and I shall attempt to show that the litigious view of Criminal Law has with us gradually superseded the inquisitorial theory, and that it is at present the great leading principle which lies at the bottom of our whole criminal procedure. I shall next proceed to illustrate this proposition from our existing practice, and to consider the advantages and defects of our own theory as compared with those of the French Courts, which appear to me to afford a very perfect illustration of the peculiar characteristics of the inquisitorial theory of criminal justice.

The Anglo-Saxon Criminal Law was almost exclusively litigious. It was set in motion by private, and not by public prosecutors, and the object of its criminal proceedings was rather the exaction of damages than the infliction of punishment.* To what extent this continued after the Norman Conquest,† is a very obscure question. In the compilation known as the *Leges Henrici Primi*,‡ pecuniary mulcts, or weres, form the principal penalties; but the view taken of the functions of royalty by the Conqueror and his successors was so different from that of their predecessors, whilst the power at their command was so incomparably greater, that it is reasonable to suppose that they disliked a system which must have been very unfavourable to public peace, and little dependent on the will of the King. It is a very probable supposition that justice was administered for some time after the Norman Conquest on two different and co-existing systems,—that the *Curia Regia*, and the King's Justices, treated offences as crimes, whilst the County Courts treated them as injuries. It is, however, well known that the central rapidly encroached on

* 1 KEMBLE, *Ang. Sax.* ch. x. p. 267; 2 HALLAM'S *Mid. Ag.* 386.
† 2 HALL. *M. A.* 462-7; 1 MAD. *Hist. Exc.* 181, &c.
‡ *Ancient Laws and Insts. of Eng.* p. 215.

the local jurisdiction. The appointment of Justices in eyre, as a permanent institution, by Henry II., was perhaps the most important step in this direction. In the next century a system was established of which Bracton has preserved to us a most minute account, and from which our existing arrangements were developed by a progress so natural and gradual that it can only be traced by comparing together the state of things at different periods, separated by considerable intervals of time. The system in question was what is usually called Trial by Jury; but it may be described more expressively, and, strangely enough, with more technical accuracy, by the less familiar name of Trial by Inquest. The importance and the specific character of the inquest has hardly been duly recognised by writers on our legal history. In very early times, judicial business was only one branch—doubtless the most important branch—of what we now know by the name of the Administrative Government; and though the Norman passion for technical procedure speedily reduced it to an exact, or comparatively exact shape, both our judicial and our executive systems bear innumerable marks of their ancient intimate connexion. The inquest was one of the most important methods of administration in early times. When communications were slow, and the art of writing comparatively unknown, the information which would now be collected in a comparatively informal manner was obtained by judicial inquiry, and nothing was more common or obvious than to order the executive officer of the Government to summon people who could give him information upon any required head, and to certify their report to the King. This, for example, was the machinery employed for the compilation of *Domesday Book*, and it was also put into action on very trifling occasions. Inquests sat to determine almost every matter in which the King was interested, in virtue of his feudal rights to wardships, reliefs, escheats, marriages, and so forth.* The Justices in eyre were far from being mere Judges; they were also great administrators. In very early times they assessed talliages, and when Bracton wrote,† they inquired not only into the commission of crimes, but into all sorts of details relating to the property and the prerogative of the Crown. In all these matters they proceeded on the information of inquests—of persons, that is, locally acquainted with the facts, and sworn to give true information about them. It was thus inevitable that in the administration of criminal justice, which formed the most important branch of their office, the Justices should avail themselves of the ordinary

* 1 Palg. *Eng. Com.* 273. † Bracton, Bk. iii. ch. 1.

means of obtaining information; and the description given by Bracton in several places, of their procedure, shows that they did, in fact, take that course. He mentions two kinds of trials: the first by appeal,* at the suit of a private person; the second by the country, or inquest, proceeding on common report, certified to the Justices by a body which was the early representative of the modern Grand Jury. It is from trials of this kind that our modern criminal procedure is derived. Their object was not the adjudication of vengeance on the suit of a private person—for this was provided for by the system of appeals—but an inquiry on the part of the public into the truth of an accusation.

'I have now to speak,' says Bracton, 'of those who are indicted by public report, which raises a presumption which must prevail' (*cui standum est*) 'till the person indicted has cleared himself from the suspicion. Suspicion arises from report, and from report and suspicion arises a weighty presumption which, however, admits of disproof or exculpation. Suspicion is of many kinds. *First*, if a report arises amongst good and weighty persons. Suspicion also arises from antecedent circumstances, which must prevail unless the contrary is proved; as, for example, if a man is appealed by an approver, and flies on account of the appeal, and returns on the death of the approver,' &c. &c. Since reports produce suspicion, 'We must consider what kind of report is sufficient for the purpose, and whence it must arise. To raise suspicion, a report ought to rise amongst good and weighty persons. . . . . for the vain talk of the crowd ought not to be listened to. The Justice, therefore, if he is discreet (since it is by reason of the report and suspicion that the jury are to inquire into the truth of the matter whether the accused is guilty or not), ought in the first place to inquire, if he doubts, and if the jury is suspected, from whom those twelve have learnt what is contained in their verdict about the accused, and on hearing their report about this he will easily be able to determine whether there is deceit or iniquity. Perhaps one, or the majority of them, will say that they learnt what is contained in their verdict from one of the jurors, who, on being questioned, will perhaps say that he learnt it from such a one, and thus the question and answer will descend from one to another till it reaches some vile and abject person to whom no credit ought to be given.'†

Parallel passages in Fleta and Britton enable us to form a pretty clear conception of the manner in which criminal trials were conducted under this system. The Grand Jury certified the fact that suspicion existed; thereupon the Justices, by the

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* *Appellatio*, calling; not appeal in our modern sense of reference from Court to Court.

† Bracton, iii. c. 23.

help of the Sheriff, deputed twelve men, who combined the present functions of a jury with those of witnesses, to examine into the truth of the accusation, and gave them a charge which answered to the modern form of giving the prisoner in charge to the jury,* and not to the modern summing up. The jury retired and considered the matter in private, and it does not appear that the Justices presided over their deliberations, or that any witnesses were examined before them. It would seem, however, from the passage to which I have referred, as well as from other authorities, that the Justices had a right to interfere if they thought proper, and were, therefore, not absolutely bound by their verdict; that if the jurors could not agree, the Court might add others to their number until a verdict was obtained; and that in extreme cases they might—at least in Henry III.'s time—altogether supersede the judicial functions of the jurors, treat them as mere witnesses, and act independently on their evidence without any verdict whatever.†

These authorities show, with the greatest clearness, that, in its original institution, the objects of English Criminal Law were inquisitorial. I shall attempt to mark some of the principal steps by which it became litigious. It is not easy to lay down any certain test by which administrative and judicial functions may be distinguished; but the existence or the absence of a well-defined system of procedure supplies one which, though not perfect, throws much light upon the subject. Such a procedure pervaded both departments of the Government in very early times, and as it became more formal and settled, it naturally converted into courts of justice institutions which originally corresponded very closely to our modern public offices. The history of the *Curia Regia* of the Exchequer, and of the Privy Council, supply palmary illustrations of the truth of this assertion. In the progress of society the various provinces of the Judges, the jurors, and the witnesses, would naturally be defined and systematized. To collect a knot of men from the neighbourhood in which an occurrence took place, and to get them to come to a conclusion upon their own knowledge, or on the reports with which they might be ac-

* This form, now in use, is as follows:—After the arraignment and the swearing of the jury, the clerk of assize says—'Gentlemen of the jury, the prisoner A. B. stands indicted of the wilful murder of C. D. To this indictment he has pleaded not guilty. Your charge is to inquire whether he is guilty or not.' This is almost a translation of Bracton.

† Possunt tamen justitiarii si viderint expedire ex causa necessariâ si grave crimen latens sit et juratores forte amore, odio, vel timore celare voluerint veritatem, separare juratores ad invicem, et quemlibet per se et separatim, examinare ad veritatem sufficienter declarandam. —Br. iii. 2, 3, fo. 143-6.

quainted, is obviously a mode of investigation which is fit only for a very rude age. Every step in civilization would therefore tend to divest the jury of the character of an inquest, and to invest them with the functions of judges, and as the Justices in eyre gradually lost their administrative, and assumed the judicial character, all their leanings and habits of mind would induce them to look upon trials rather as instances of litigation than as inquiries for administrative purposes. To this it must be added, that the growth of English liberty and the high, free, and generous spirit of the nation, gave a powerful impulse to the course of events in the same direction. Instead of freeing the ancient administrative officers of the Crown from the trammels entailed by the cumbersome character of the machinery at their disposal, the national instinct imposed upon them restrictions even more definite, and confided to them a discretion more limited, until, by degrees, a system of legal procedure was developed out of what was, perhaps, at one time, little more than an official routine.

The epoch of the transition from the inquisitorial to the litigious theory of Criminal Law is marked by the time when the Grand Jury ceased to inquire and present on their own knowledge or suspicion, and began to do so on the evidence laid before them by private prosecutors. In ancient times, private persons could bring criminals to justice only by an appeal, in which, unless the evidence was of the very strongest kind, the appellee might 'wage his body,' *i. e.*, challenge the appellor or accuser to battle. This practice, though not absolutely abolished till within living memory, was greatly curtailed in the time of Henry VI. by a judicial decision, which established the principle that appeals could not be tried pending an indictment.* It seems a fair inference to conclude that at this period criminal trials had become so far litigious that private prosecutors could indict whom they pleased before the Grand Jury, as the effect of the decision would otherwise have been to supersede the private prosecutor's remedy.

The practice of submitting evidence to a jury was not fully established till the time of Henry IV.;† and in the subsequent reigns, down to the time of the Revolution of 1688, some traces of the original inquisitorial character of criminal trials remained. The most remarkable of them were the practices of interrogating the prisoner, and that of stating to the jury, on the authority of the Court, facts not in evidence. It is self-evident that the first of these proceedings is inquisitorial and not litigious. The other is a legitimate consequence

* 3 Reeve. *Eng. Law*, 419. † Hallam. *Mid. Ag.* Suppl. Notes, 258.

of the theory that it is the province of the jury to inform the Court of matters on which it is ignorant, so that if the Judges are already satisfied of a particular circumstance, there is no need to prove it to the jury. In Throckmorton's trial,* the prisoner was not only interrogated at great length, but several confessions were read against him. Although an offer was made to call some of their authors, it was made rather as a matter of favour to the prisoner than for the sake of trying out the case. In the trial of Udall, in 1590, the same course was taken. Irregular and unjust as such proceedings may appear to us, there can be no doubt that they are justifiable if the primary object of the verdict of the jury is to satisfy the minds of the Judges and not to record the impression left upon the jurymen themselves by hearing the evidence. The practice of fining the jury for a verdict unfavourable to the Crown, though according to our views a gross and barefaced iniquity, and though even under the Tudors it was considered a very oppressive act, may be explained by reference to the original character in which jurors acted. It is natural enough that if the primary function of jurymen was to supply information to the Government they should be compellable to supply true information, and be punished for not doing so; and this was the principle of the ancient process of attaint.†

Independently of the vestiges which might still remain under the Tudors of the ancient inquisitorial theory of Criminal Law, another powerful agency was at work which tended permanently and definitely to impress upon it that character. This was the criminal jurisdiction of the Council, which, after it had been exercised with more or less regularity for a great length of time, was confirmed by statute in 1486.‡ The power given by that Act, which regulated if it did not constitute the famous Court of Star-Chamber, applied only to 'great riots, unlawful assemblies,' and various forms of intimidation and corruption; but the procedure was modelled upon that of the Civil Law, and there was a constant disposition on the part of the Judges to extend the powers of the Court much further than the statute warranted. Ordinary procedure was at that time so much a matter of indefinite custom, that it is impossible to overrate the importance of the example set to the ordinary courts of justice by such a body; and it must be observed that the Court not only conducted trials in the matters legally sub-

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* 1 *St. Tr.* 870. 1 *S. T.* 1271.

† The practice survived till the year 1670—see Bushell's Case, 6 *St. Tr.* 967, 829.

‡ 3 Hen. VII., c. 1. See also 1 HALL. *Const. Hist.* p. 72, &c.

ject to it entirely upon the inquisitorial principle, but that it also collected evidence and discharged duties not unlike those of a French *Juge d'Instruction*, in respect of offences which were to be tried by the Common Law Courts. The most striking illustration of this fact is to be found in the reading of Mr. Jardine on the use of torture, in which he shows that, during the reigns of Elizabeth and James I., the Council frequently issued warrants for the infliction of torture in order to extort confessions from prisoners accused of horse-stealing, robbery, murder, and other private crimes, which confessions were afterwards to be given in evidence against them at Common Law. The Common Law Judges sat in the Star-Chamber as well as in Westminster Hall; and we need only read the trials of Throckmorton and Udall to convince ourselves of the deep influence which that fact exercised over their ordinary procedure in their own Courts. No French Judge could submit a prisoner to more searching interrogatories than were administered to these two persons.

During the interval between the Restoration and the Revolution, the whole spirit of the administration of criminal justice underwent a deep change. The establishment of the Commonwealth and the execution of Charles I. certainly produced a powerful reaction; but they greatly and permanently abridged the distance between the King and the nation, and went far to destroy the mysterious sanctity with which the authority of the Government had formerly been regarded. This change nowhere appears more clearly than in the reports of the political trials of Charles II. and James II. Under the Tudors and the early Stuarts, the position of the royal power was sufficiently high to give some weight to their claim to be engaged in the investigation of truth, for the purpose of administering justice when they prosecuted for political offences; but under Charles II. and James II. it was impossible to see in such trials anything else than a furious personal struggle for life or death. To force, to terrify, or to persuade the jury into authorizing them to kill their enemies, was the all but undisguised object of the prosecutors in the State Trials of those days. There was hardly any pretence of impartiality, and the parties were not in such a relative position as to give the Crown that sort of superiority which is implied in the institution of a public inquiry. The Star-Chamber and its forms had been swept away, and the litigious theory of Criminal Law was established at once by the simple fact that the most important class of criminal trials became palpably and obviously nothing else than litigations prosecuted with the most vehement personal feeling, and involving the dearest personal interests.

Still, however, in respect of private crimes, something of the old inquisitorial character of Criminal Law remained. Several cases during this period, not connected with politics, are reported in the *State Trials*, and in all of them the matter seems to have been more in the hands of the public authorities before it was brought into Court than is the case at present, whilst in each of them the Judges interrogated the prisoner. The most remarkable of these cases are those of Colonel Turner,* tried for burglary in 1669, and Count Koningsmark,† tried for the murder of Mr. Thynne in 1682. In each of these instances the principal witness for the Crown was the committing magistrate, who not only closely questioned the prisoners upon the circumstances which inculpated them, but personally made investigations closely resembling those of a French *Juge d'Instruction*. They also stated in Court a great variety of circumstances which in the present day would not be admissible in evidence, in order to account for their suspicions having been aroused. In both cases, also, the prisoners were interrogated—Turner rather roughly and very strictly, and Count Koningsmark favourably, and no doubt with a corrupt view to his acquittal. The trial of Mr. Hawkins,‡ a clergyman of Aylesbury, for theft, is an instance of a purely litigious criminal proceeding, although the prisoner was twice questioned by the Lord Chief Baron Hale. In this case, however, the accusation was sustained by the grossest perjury, and was got up entirely for base private ends.

From these observations it may be concluded that at the commencement of the last century the feeling that a criminal trial was a litigious and not an inquisitorial proceeding, was established by the bitter experience of half a century, and the attention of the Judges, placed at last in an independent position, was turned to the propriety of making the litigation fair for both parties. This tendency may be observed in some statutory provisions of the time, such, for example, as the Act giving the prisoner the benefit of counsel and a right to a copy of the indictment in cases of high treason; but in the ordinary routine of the administration of criminal justice, the principle could only be realized by the process of judicial decision. The legislative powers which were and are exercised by the Judges have at all periods of our legal history been important, and during the eighteenth century they were exercised with greater freedom and boldness than at present. The particular steps by which our existing system was established are very obscure; but it is an undoubted fact that, whereas in

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* 6 *S. T.* 565. † 9 *S. T.* 1. ‡ 6 *S. T.* 921.

criminal trials before the Revolution of 1688, no one of our present rules of evidence was well established,* and none habitually observed, we find by the end of the century that our existing rules were established in all their rigour, though certainly not with their existing profusion of detail, which is for the most part the growth of the present century. It is also certain that one great principle upon which they proceeded was, that the same rules applied to criminal as to civil cases—in other words, they were founded expressly upon the litigious as opposed to the inquisitorial theory of criminal justice. Any one who will study the early volumes of the *State Trials*, and compare them with those which relate to the eighteenth century, will find abundant proof of the fact that the practice of the Courts during the period uniformly tended to a systematic assimilation of criminal to civil trials. That this most important change was brought about by the judges† in discharge of that qualified exercise of legislative power which the practice of the country entrusted to them, is proved by the absence of any express statement by the principal writers on Crown Law of the rules of evidence which now form so prominent and characteristic a part of our system. Except in respect to questions of competence, Sir Matthew Hale says hardly anything on the subject; whilst Hawkins, Blackstone, and Foster are equally silent. The effect of the rules of evidence may be briefly summed up by saying that they proceed upon the supposition that a criminal trial is an action between the plaintiff and the defendant, in which the Judge is passive, merely regulating the proceedings and transmitting to the jury the statements of the opposite parties; and that they impose upon the plaintiff or prosecutor the obligation of adducing proofs of a certain determinate kind, sufficiently powerful to leave upon the minds of the jury no reasonable doubt that the defendant or prisoner falls within a certain category. The only ministerial function performed by the Judge is the apportionment of punishment; the rest of his office is purely judicial. As a plaintiff in a civil action, so the

* Except, perhaps, that which excludes hearsay evidence. It was recognised by Jeffreys in Lord W. Russell's trial—9 *S. T.* 619. It is the only rule of evidence referred to in the instructions drawn up for the use of Algernon Sydney, by Sir W. Williams—*Ib.* 826. It was also laid down vaguely in the case of Mary Moders, tried for bigamy in 1663—6 *S. T.* 276.

† Bentham was by no means the first person to denounce 'Judge-made law.' To say nothing of Junius's attacks on Lord Mansfield, there are numerous instances in the *State Trials* of the popular dislike to the law of the Courts as opposed to the laws enacted by Parliament. The subject is discussed by Hobbes on very wide grounds indeed, in the 'Dialogue of the Common Law,' 6 *English Works*, p. 1, &c.

prosecutor in a criminal trial is to prove his case, and in doing so he receives no assistance from any public functionary whatever. In short, an English criminal trial may be considered as the discussion of the question: shall we grant the prosecutor's demand that the prisoner may be punished? In order to be able to secure the discussion of this question, the prosecutor must, in the first place, satisfy the Grand Jury that it is a request which he has a right to make. The proceedings before the committing magistrate are conducted on precisely the same principle, and are calculated to give the prosecutor security that the prisoner shall be forthcoming when he is wanted; but he could, if he pleased, dispense with them altogether. The whole effect of our criminal procedure is to regulate the manner in which this request is to be put forward, and the terms on which it will be granted. In point of form, no doubt, the Crown is in every case the prosecutor; but the real prosecutor has so entirely superseded the Government in the character of plaintiff, that there is at least one important practical distinction between cases in which the Crown's function is substantial and those in which it is only nominal. In the former, the counsel for the Crown has a right to the last word, whether the prisoner calls witnesses or not.

The great cardinal principle of English criminal procedure is this. No request that a person may be punished shall be granted unless the person who makes it, by proofs of a particular kind, convinces beyond all reasonable doubt, twelve men selected in a particular manner, of the guilt of the person with respect to whom the request is made. It is needless in this place to say anything of the qualifications of jurors—therefore two points remain to which our attention must be directed: What is the nature of the effect to be produced on the minds of the jury? What are the means of producing it which the law allows to be employed?

Every one would admit that evidence of guilt of some amount of cogency is necessary in order to warrant the infliction of punishment; and this raises a question as to what standard of cogency is to be adopted. Innumerable discussions have taken place upon this subject. Thus, for example, writers of considerable reputation have maintained that a conviction upon what is called circumstantial evidence is not justifiable unless the circumstances proved are inconsistent with the prisoner's innocence,*—a condition which, in all human probability, never was and never will be fulfilled;

* This is the opinion of Mr. Wills, the author of an *Essay on Circumstantial Evidence*, one of the very few books on English Law which is interesting, or even intelligible, to an unprofessional reader.

whilst so great a man as Jeremy Bentham proposed that the jury should declare what were the odds as to the prisoner's guilt or innocence—whether five to one, seven to one, or ten to one—and that unless a certain degree of probability (say, for example, seven to one) were reached, punishment should not be inflicted. These are, perhaps, the most famous suggestions upon this subject which have been made in this country, though under the Civil Law the evidence of two witnesses was required in capital cases, and a variety of rules were laid down about *plena* and *semiplena probatio*.

The question is one of grave practical importance, for it frequently gives rise to discussions which command a great deal of public attention in cases where a conviction—especially a conviction for murder—has been obtained upon circumstantial evidence; and proposals are frequently made, sometimes of the wildest kind, for restricting the powers of juries in cases which rest upon proofs of that description. I think that the confusion which exists upon the subject arises from the fact, that almost all writers upon it have attempted to estimate the force of evidence on a wrong principle. Their object has been to say, whenever such and such conditions are fulfilled, men will be convinced, and not otherwise. Therefore prisoners ought not to be convicted unless such and such conditions are fulfilled. The true principle appears to me to be to estimate the value of evidence entirely by the effect which it does in fact produce upon the minds of those who hear it. The value of evidence is surely measured as exactly by the state of mind which it produces as a force is measured by the weight which it will lift. If a set of circumstances are put in evidence which, though consistent with the prisoner's innocence, leave no doubt at all in the minds of those who hear of them as to his guilt, the evidence does as much, produces as great an effect, and is therefore experimentally proved to be as strong as if they had been inconsistent with his innocence. It may, however, be said that what will satisfy one man's mind will not satisfy another's, and that therefore such a test of the value of evidence, as its power of satisfying the minds of a jury, is indeterminate. This, no doubt, is true. It is an indeterminate test, but we can have no other. We cannot say no man shall be convicted unless there are six pounds or eight yards of evidence against him; and Bentham has conclusively shown that it is not much less foolish to require the evidence of two or of three witnesses, for innumerable cases may be put in which the evidence of a single man is from circumstances far weightier than that of several. Almost all language which does not apply to matters of weight and measure is indeterminate, but it is not therefore unmeaning. What is meant by

a 'safe' bridge? Certainly not one which contains a few trifling flaws, for probably no bridge is quite free from imperfections. No one, however, could describe the varieties or degrees of imperfection which would render it unsafe. The phrase, however, is not only not unmeaning, but is capable of having a clear technical signification attached to it, for it would be easy to provide that any bridge should be considered 'unsafe' which the surveyor of the district should adjudge to be so. The effect of the existing rules as to the amount of evidence necessary for conviction is precisely analogous to this. We all know what that state of mind is which we call doubt, and no definition would make it clearer to us than it is already, and we likewise all know what that state of mind is which we call certainty. We are therefore able to say, with respect to any given subject upon which we have thought, whether or no, as a matter of fact, our minds are in a state of doubt; and the law says that the amount of evidence necessary for a conviction is that amount, be it greater or less, which will place twelve jurymen in a state of certainty. This amount, of course, varies very much according to the composition of the jury, and therefore the test is an indeterminate one, though it is perfectly applicable. It may, however, be observed, that this view of the nature of the jury's functions supersedes the controversies to which I have referred respecting circumstantial evidence. On this view of the subject they become questions not of principle but of fact, and resolve themselves into an inquiry as to the character of the combinations of circumstances which have in point of fact satisfied juries of the guilt of accused persons.

A plausible objection to this view may be founded on the right which the Judges exercise of directing an acquittal in cases in which the evidence breaks down upon a particular point, which practice may be said to indicate the necessity that some specific amount of evidence should be offered to the jury, and not merely such an amount as relieves their minds from doubt. The most remarkable instance of this which can be mentioned is Lord Cardigan's case,* in which the prisoner was acquitted by the House of Lords, acting on the advice of Lord Denman, because there was no evidence to show that the Harvey Garnett Phipps Tucket mentioned in the indictment was the same person as the Harvey Tucket who was wounded on Wimbledon Common. Close attention will, however, show that this objection is only apparent. The Judge has no power whatever to control the verdict of the jury. Even in the most extreme case of all—if no evidence were

* 1 TOWNSHEND'S *Mod. St. Tr.* 229, &c.

offered for the prosecution, and the jury chose to convict—the only remedy would be a pardon from the Crown. Cases, I believe, have occurred in Ireland, where the jury, under the influence of strong party feeling, persisted in convicting in the face of the Judge's direction to acquit, and the Court was obliged to take their verdict. The true explanation of the practice, as far as it relates to the present question, is, that the jury are to form their opinion from the evidence only, and not from general antecedent probabilities; and that the Judge, whose mind is trained to the task, exercises the right of warning them of gaps in the chain of evidence which an uninstructed mind would fill up from extra-judicial considerations. A man is charged with shooting Harvey G. P. Tucket. It is proved that he shot Harvey Tucket. Upon what grounds would a reasonable man suppose that Harvey Tucket was also called Garnett Phipps? The indictment itself could be no proof of the facts which it alleged; and the only considerations which could remove the doubt would be quite independent of the evidence produced at the trial. They would be, for example, such as this—that it would be very unlikely that an indictment should be drawn up without any reference to any real fact; that it was matter of universal notoriety that Lord Cardigan had shot a Mr. Tucket in a duel, and that nobody ever heard of his shooting more persons than one of that name; so that, in all probability, the person referred to by the evidence would be identical with the person named in the indictment. Now, it is one of the principal objects of the rules of evidence to withdraw such general considerations from the minds of the jury, and to obtain from them an account of the state of mind produced in them by evidence of a much narrower description. The practice, therefore, of which I am speaking, amounts to nothing more than a warning on the part of the Judge, that the legitimate sources of opinion are failing the jury on a particular point, and that they must not have recourse to others. It is, moreover, a warning only, and not an express authoritative command, although no doubt it invariably acts as such.

Such being the nature of the result to be obtained, what are the means by which the law allows it to be produced? They are limited by the famous system called the rules of evidence—rules, I believe, almost entirely peculiar to this country, and the objects of the most vehement attack and passionate defence. Though these rules have been applied to an infinite number of cases, and have been so overlaid with comments, illustrations, applications, and corollaries, that they form a large and complicated branch of the law, they are in themselves very few and very simple. They may, indeed, be reduced to the fol-

lowing principles:—*First*, the evidence must be confined to the point at issue—that is, it must tend to prove or to disprove some or one of the material averments of the indictment; *secondly*, the best possible evidence must be produced—for example, the contents of an existing writing must be proved by the production of the writing itself; *thirdly*, hearsay evidence of a fact is not admissible; *fourthly*, no one is bound to answer questions which criminate himself—an accused person may not be questioned at his trial—and as husband and wife are one person in law, they cannot be witnesses for or against each other.

The object of these rules is, first to restrict the quantity, and secondly to guarantee the quality of the proofs on which the jury are required to form an opinion. That they answer the first purpose most effectually cannot be doubted; and it is a most important one. If it were allowable to lay before a jury every consideration which could possibly affect their minds in relation to the guilt or innocence of an accused person, there would be no end to trials, and verdicts would ultimately be given from party feeling, prejudice, or a thousand other improper motives. Whether, as a general rule, they secure the second object is a question of fact, which nothing but experience can decide. My own impression is, that two out of the four rules might be advantageously relaxed. I think that, for many reasons, the rule which makes an accused person or his wife incompetent witnesses, is a bad one; it affords a certain amount of protection to crime, and is a very great hardship on innocence. The very fact that suspicious circumstances are put in evidence is in substance, though not in form, an interrogation of the prisoner. It amounts to an inquiry whether he can give any explanations on the subject, and few things weigh more strongly against him than omission to do so. It would surely be better to ask the question in so many words than to do it covertly; and though it may be true that a man will often lie to save himself, we must remember that the weight of testimony depends far more on its truth than on the credit of the person who gives it.* The rule requiring the production of the best evidence is very technical, and often operates very harshly. For example, matters of record can only be proved by the production of the record. A man was tried for procuring abortion, and was acquitted. The Judge did not agree with the verdict, and directed him to be recommitted, and indicted at the next assizes for murder (the woman having died). He was accordingly indicted, and pleaded *autrefois acquit;* but as he was a poor man, and was not able

* See below, p. 56.

to instruct counsel before the assizes began, he had not been advised to procure the piece of parchment technically called the record; and though his counsel offered to call the Clerk of Assize who had taken the former verdict, and to produce the memorandum made by him officially at the trial—of which memorandum the record itself was only a transcript—this evidence was excluded, and the man was capitally convicted, and transported for life.* No doubt the non-production of an original document may, under particular circumstances, be very suspicious; but whether it is so in the particular case or not, would seem to be a question rather for a jury than for the Court.

Besides these rules as to the nature of the evidence itself, there are several rules of great importance as to the mode in which it is to be elicited, which illustrate more clearly than any other part of the proceedings the litigious character of English criminal justice, for they avowedly rest on the principle that the witness favours the party who calls him. The most important of these rules are, that the side which calls a witness must not ask him leading questions—questions, that is, which suggest the answer. So, too, a man is not at liberty to contradict his own witness, for to do so would be, to use the Scotch phrase, to 'approbate and reprobate.' It is asking the jury to believe so much of your own story (for it is the essence of the whole system to look upon the witness as the organ of the party calling him) as makes in your favour, and to disbelieve what makes against you. The most characteristic feature of all, and that in which our own differs most widely from the French system, is the circumstance that the evidence is produced and marshalled, not by the Judge, but by the counsel who are the representatives of the litigant parties; and that, except in apportioning punishment or in the decisions of questions of law arising incidentally, the functions of the Judge are entirely passive.

The nature of the evidence requisite to convince a jury, and the practical operation of the rules of evidence, can only be gathered from facts. I will, therefore, attempt to show the value of the standard of certainty which is produced by the joint operation of the principles and rules which I have attempted to delineate. Its value can never, by its very nature, be absolutely determined, but some notion may be

* The case is not reported. My account of it rests on the recollection of the prisoner's counsel, which may possibly be inaccurate, as the matter happened several years ago. It is, however, obvious that such a case might happen. In the particular instance referred to, the plea could not have been supported if the record had been produced.—*Reg.* v. *De Salvi*, Cen. Cr. Ct., Oct. Sess. 1857.

formed of its exigency by a statement of the circumstances of two cases which illustrate, first, the maximum strength of evidence on which juries have refused to convict, and, secondly, the minimum strength of that on which they have convicted. It may, perhaps, appear to many persons that the evidence accepted in the second case is not so strong as that which was rejected in the first; but the line which separates that amount of proof which does from that which does not exclude doubt is not straight, but bends a little from side to side, according to the temper of the jury.

Mr. Belaney, a surgeon, was tried at the Old Bailey in 1844 for the murder of his wife. Towards the end of May in that year, the prisoner and his wife made mutual wills in each other's favour. On the 1st June they came to London from Sunderland, and on the 4th went into lodgings. On the 8th, at a quarter before eight in the morning, the prisoner called in his landlady, saying that his wife was very ill; but he refused to send for a doctor, saying that he was one himself—that she had a heart complaint, that she would not recover, and that her mother had died some months before in the same way. Various remedies were administered by the prisoner and the landlady, and at last a medical man was fetched; but before he came the deceased had died. The prisoner certified that her death was caused by brain fever. Prussic acid was found in the stomach. It appeared that the measures taken by the prisoner were not calculated to promote recovery from the effects of that poison. The prisoner had bought prussic acid the day before his wife's death; and when the landlady came into the room, there was a tumbler close to the head of the bed, about one-third full of a liquid which, though clear, was whiter than water. Two days after, the prisoner told the doctor who examined the body that he had bought the prussic acid to use it under a prescription for a complaint of his own (and it was true that such a prescription had been given); that in opening it, the stopper stuck in the neck, and that, in using a tooth-brush to force it out, he broke the bottle; that he poured the prussic acid into a tumbler, and went out to get another bottle for it; but that he changed his mind, and began to write a letter, and that in his absence his wife took the poison by mistake. There was a paper of Epsom salts and an empty tumbler near the tumbler which contained the other liquid, and the prisoner told the medical man who was called in that his wife had taken no medicine but salts. He further said that he had destroyed the prussic acid bottle in distress at his own carelessness. In opposition, however, to this story, it was shown that two days before his wife's death he had written a letter to say that she was unwell—that two medical

men had seen her—and that, in consequence, he meant to give up an intended visit to Holland. In another letter, written on the day of her death—of which it was uncertain whether it was written before or after the event—he said that two medical men had seen her, and that one of them pronounced her heart to be diseased. All this, as well as the statement that his mother-in-law had died of a heart complaint, was false. The jury acquitted the prisoner, considering probably that it was just possible that his explanation might be true.*

The case of John Donnellan forms a curious contrast to this. He was tried at Warwick, in 1781, for the murder of Sir Theodosius Boughton, his brother-in-law. Sir Theodosius, generally speaking, had good health; but his brother-in-law several times falsely represented it to be very bad. One day he was ordered to take a mild dose, and the evening before he took it Donnellan falsely told his mother that he had got his feet wet. When he took the dose, which was given him by his mother, he complained that it tasted of bitter almonds; and in about half-an-hour he died. Donnellan came in soon after, and asked Lady Boughton where the bottle was. She showed him two; and when they were pointed out, he poured some water into one, shook it, and emptied it into a basin. She told him not to do so, and he immediately poured water into the other bottle, and put his finger to it, saying he did so to taste it. Donnellan had a still in his room for distilling roses; and, soon after the death of the deceased, brought it full of wet lime to a servant to clean. He made a variety of false statements about the circumstances of the death, and, in a correspondence with the guardian of the deceased, told various falsehoods tending to prevent an examination of the body. Before the coroner he tried to prevent Lady Boughton from giving evidence as to the rinsing of the bottles, and he tried to persuade the coroner that the death had been caused by arsenic bought to poison fish. The medical evidence was very meagre indeed. One of the witnesses swore that on opening the body he had a sharp biting taste in his mouth, like that produced by laurel water in subsequent experiments; and others gave their opinions that the symptoms of the death were caused by that poison. On the other hand, the famous John Hunter swore that the symptoms might have arisen from other causes, and that the appearances on dissection arose from putrefaction. Donnellan was found guilty, and hung.†

If we compare this with the recent cases of Madeleine

* Wills' *Circ. Ev.* 159. † Wills' *Circ. Ev.* 192.

Smith and Spollen, there can be no doubt that the standard of certainty required has risen of late years. Several causes have contributed to this result, many of which do not belong to my subject; but one may be noticed, because I do not think sufficient attention has been paid to it. Up to the year 1836, so much of the old inquisitorial theory of Criminal Law still prevailed, that counsel were not allowed to address the jury for the prisoner in cases of felony. This was a rough, though probably an unintentional and even unconscious substitute for the practice of interrogating the prisoner. He had to tell his own story in his own way; and if he did not stoutly assert his innocence, and explain the facts which made against him, the jury naturally suspected him. Since prisoners have been in all cases allowed the benefit of counsel, this has entirely changed; for at present the contention of the prisoner's advocate is not that his client is innocent, but that he is not proved to be guilty. The former state of things was curiously illustrated in the cases of Eugene Aram and William Andrew Horne.

The leading facts of Eugene Aram's case, and the singular circumstances which brought his guilt to light, are too well known to require re-statement; but the immediate cause of his conviction curiously illustrates the point to which I have referred. The principal evidence against him was that of the approver Houseman, which was confirmed in the following particulars:—A skeleton was found in the place and position indicated by him as that in which Clark, the murdered man, had been buried; it was proved that, shortly before his disappearance, Clark had told Aram, in Houseman's presence, that he had received his wife's fortune, and had it in his pocket; it was shown that Houseman had been at Aram's house after midnight on the day of Clark's disappearance; and, above all, it was proved that certain goods belonging to Clark were dug up, shortly after his disappearance, in Aram's garden. Inasmuch, however, as, shortly before that event, Clark had contrived to possess himself of a quantity of property, with which on the occasion of his murder he was supposed to be absconding, Aram might naturally enough have shared in the fraud without being concerned in the assassination. The evidence, indeed, seemed to be consistent with, and even to point to the conclusion that Houseman and not Aram was the murderer. All this might very possibly have been successfully urged by an advocate; but when Aram chose, in defending himself, to assume a speculative tone, and instead of denying his guilt, taxing Houseman with the crime, and explaining or denying the other circumstances of the case, to deliver a highly finished and curiously elegant

essay on the inconclusiveness of the evidence, studiously avoiding throughout anything like a denial of his guilt, he gave the Judge an opportunity of observing that his defence did not look like innocence;* and he was convicted and executed accordingly.

The case of William Andrew Horne is still more extraordinary. He was convicted at Nottingham, before Chief Justice Parker, on the 10th of August, 1759 (just a year after Aram's trial), of the murder of his natural child, by exposure to the cold, in February, 1724.† The principal evidence against him was that of his brother Charles, who accompanied him on the occasion from Butterley in Derbyshire, to Annesley in Nottinghamshire, where the child was exposed. The only corroboration of his story was given by some witnesses who remembered finding the child in the place and at the time described; but this was of little weight, as such an occurrence would be a common article of news. Another circumstance which certainly added something, though perhaps not much, to the weight of Charles Horne's testimony was, that in the interval between the crime and the trial he repeated the same story to several people, and especially on one occasion, when in the immediate prospect of death. This could not be put in evidence at the present day, under our own, though it possibly might be under the Scotch rules respecting hearsay evidence.‡ The prisoner's own statements, however, made very strongly against him. To one witness, who told him of the accusation, he said, 'Tell Charles he can't hang me without hanging himself, and that if he behaves well I will be a friend to him.' He sent another witness to his brother to hear what was said when the warrant was granted, and upon hearing that he had described the horses on which they rode, observed, 'What occasion had he to tell that? It was malice,

* His defence was written and preserved verbatim. The conciseness and polish of the style are wonderful. If it is true that before the summing up of the Judge the jury were ready to acquit him, great credit is due to their taste. The speech has all the grace and simplicity of Greek, and does not contain a single claptrap sentence.

† This is a far stronger case of tardy punishment than Governor Wall's, which Lord Campbell speaks of as unexampled. His trial took place only twenty years after his crime; Aram's about thirteen years. There have been other examples of trials (*R.* v. *Clewes*, at Worcester, in 1830, and *R.* v. *Roper*, at Leicester, in 1836,) which ended in acquittals twenty-four and thirty-four years respectively after the facts to which they referred.—Wills' *Circ. Ev.* p. 149.

‡ The principle laid down by the Judges in Madeleine Smith's case was, that evidence of what third persons said in the absence of the prisoner was admissible when the circumstances were not such as to show the existence of any motive for falsehood.

it being done thirty or forty years ago. He will hang himself as well as me.' When the constable came to arrest him, he hid himself. The prisoner said in his defence that he knew nothing of the crime, and called witnesses to prove that his brother had used language showing a wish to hang him, that he might have his estate. He was convicted, and hung at Derby on his seventy-fourth birthday. It is impossible to doubt that his silence as to the expressions imputed to him must have weighed heavily with the jury; and it is equally plain, that if he had been defended by counsel, plausible hypothetical explanations of them might have been put forward. It is easy for an advocate to say, 'My client's mouth is stopped, and he cannot give his own account of the matter; but can you be sure that the expression quoted may not have been so and so?' But a man can hardly say in his own person, Perhaps I may have meant something different from what I said; nor can he deny the words imputed to him without putting himself in direct contradiction with the witness who affirms them.

The nature and value of the standard of certainty thus obtained, is curiously illustrated by reference to the general characteristics of mistaken convictions. It is vain to hope that human ingenuity will ever be able to devise a system under which such occurrences will never take place. At a certain point, the burden of proof must shift from the prosecutor to the prisoner; and if he is unable to rebut the presumption raised against him, conviction must follow. There are two ways by which innocence may be protected. The trial may be looked upon as a public inquiry, in which evidence proving the prisoner's innocence is as important as evidence proving his guilt; or it may be looked upon as a litigation, in which each of the parties has to prove what makes in favour of the proposition for which he contends,—and if the latter view is taken of the subject, protection can only be given to an innocent man by requiring very clear and very weighty evidence from the prosecutor. I have attempted to show how far this is accomplished under our system, and it is obvious that the standard adopted affords a very strong security to innocence. The following is, perhaps, as curious a proof as any on record that, though strong, it is not absolute:—In 1758, a Mr. Barnard was tried for writing a threatening letter to the Duke of Marlborough. In November, 1757, the Duke received two letters demanding a 'genteel support for life,' and declaring that, in default of obtaining one, the writer would murder him. The first letter made an appointment with the Duke at 10 A.M. on the next Sunday, at a certain place in Hyde Park; and the second in

the west aisle of Westminster Abbey, at 11 A.M. on another Sunday. The Duke kept each appointment, and at each met the prisoner—on the first occasion alone, no one else being near; and on the second, in company with a person whom he afterwards left in order to approach the Duke. On both occasions the Duke spoke to the prisoner, and on both the prisoner denied having anything to say to him. The Duke afterwards received a third, and subsequently a fourth letter, in which the prisoner was mentioned to him by name. Each of the three letters referred to the circumstances of the former meetings. In consequence of the fourth letter, the Duke wrote to the prisoner, who came to him, and turned out to be the same person whom he had met in the Park and the Abbey; and some conversation passed between them upon the subject of the letters, in which the prisoner neither seemed surprised nor denied their authorship. He succeeded, however, in proving to a demonstration that the two meetings were accidental, and in showing, by other considerations, the extreme improbability of his guilt. In the absence of such evidence he would have been undoubtedly, and most justly, convicted. If evidence strong enough to exclude so unlikely an occurrence were required to be given in all cases, no one ever would be convicted at all.*

Other cases might be quoted which have had a very tragical ending; they are all reducible to one typical form. A man intending to murder another, goes into his bedroom with a drawn knife, finds him already murdered by some one else, drops the knife in the blood, is found, tried, and hung. Some twelve or fifteen strange cases of this sort are stated by Mr. Phillips, in his *Essay on Capital Punishment.* A popular conclusion is, that circumstantial evidence cannot be relied upon. It is a sufficient answer to say, that without it the administration of criminal justice would entirely cease. In a great majority of cases there is little else, and no case whatever is independent of it; indeed, a conviction on direct evidence alone could never be obtained for any serious crime. If several men swore that they had seen another stab a man in the street, and if no one had seen the body, or knew anything of the murdered man—if there was no blood on the supposed murderer, no weapon, and no evidence of malice against any person whatever, nothing even to show that he was near the spot at or about the time—conviction would be out of the question; yet all these facts are circumstantial, and not direct evidence. It is easy, as a matter of rhetoric, to say that it is better that ten guilty persons should escape than that one innocent one

* 19 *S. T.* 815.

should suffer; but it would be absurd to attempt to maintain as a matter of logic, that it was better that ten thousand guilty persons should escape than that one innocent one should suffer. The occasional condemnation of the innocent is an unavoidable evil which will happen under all systems; and just as we know when a railway is made that a certain number of people will be killed in making it, so we know that whenever a nation administers justice, it will sometimes punish innocent men. There is, however, one special cause of such catastrophes which is peculiar to our own procedure, and which might be easily removed. I allude to the extraordinary haste with which trials are at times conducted. Bellingham shot Mr. Perceval, was arrested, committed, tried, and hung, within little more than a week, and was thereby prevented from setting up the defence of madness. I myself heard a man sentenced to death* on one Friday for a murder committed on the preceding Friday. The prisoner's appearance was imbecile, and he was known to suffer from epileptic fits. He was pardoned on the ground of insanity, but not a word was said of this in court; and he was not even defended, except by a gentleman to whom the Judge handed the depositions from the bench after the trial had begun, and who was not only unacquainted with the facts, but heard the evidence for the first time in court.

The influence of the litigious principle is as strongly marked in the rest of our criminal procedure as upon the rules of evidence. From the arrest of the prisoner down to the verdict of the jury, no public functionary is in any way bound to investigate his guilt, and the prosecutor receives no other assistance from the law in collecting his evidence, than he would have in a civil action. He is a mere private person, and has no official character whatever. When, as is frequently the case, a policeman is the prosecutor, his official position makes no kind of difference in his powers—his acts as prosecutor are in every respect as unofficial as those of any private person. The same principle applies in exactly the same manner to prosecutions conducted by the solicitor to the Treasury, as agent for the Government. He has no advantage over any other solicitor, but prepares the case for trial exactly as a private attorney would in a civil action for damages. The only difference in principle between civil and criminal proceedings in the preliminary procedure is, that in the latter the accused person is liable to be, and generally is, taken into custody; but this fact must be viewed in connexion with two other circumstances, which give to it a character altogether

* At the Northampton Summer Assizes in 1855.

different from that of the apparently analogous practice in France. In the first place, imprisonment before trial is with us intended exclusively for safe custody, and is not in any way whatever made subservient to the collection of evidence. It is only allowed after sufficient evidence has been given publicly,* and subject to all the rules of evidence, to persuade a police magistrate or justice of the peace, who stands in no sort of official relation to the prosecutor, that a strong suspicion of the guilt of the accused person exists; and, in the second place, accused persons are bailable in this country in all cases whatever, though a discretion exists as to taking bail—the principle being, that bail ought never to be refused when the appearance of the prisoner can be secured by it. In France, *délits* only are bailable, but *crimes* (which answer roughly to felonies) are not — the reason being, that with them the preliminary imprisonment is not merely precautionary, but is one of the principal means of obtaining evidence. It may further be added, that the practice (which in one or two cases still exists) of arrest on mesne process in civil actions was precisely analogous to that of committal for trial, except that it bore far more harshly on the defendant than the correlative practice bears on the prisoner.

When the case actually comes to trial, the recognition of the litigious principle is, if possible, still more express. The prosecutor and the prisoner almost exactly replace the plaintiff and defendant. If the prosecutor or his witnesses do not appear, or if the prosecutor offers no evidence, the prisoner is acquitted; and if he chooses to forfeit the sum in which he is bound over to prosecute, he can always defeat justice if he pleases. The rules which regulate the addresses of counsel to the jury, and the sharp division which exists between the evidence for the Crown and the evidence for the prisoner—each side calling its own witnesses and eliciting their testimony by questions, and each in its turn cross-examining the witnesses called on the other side—are equally analogous to the proceedings in a civil action, and the Judge is as entirely passive in the one case as in the other. The practice—almost peculiar to the English law—of never interrogating the prisoner, is to a great extent founded on the old rule (now abolished) which made the parties to actions incompetent witnesses; and the

* Always in practice, though the place in which the proceedings take place is not an open Court (11 & 12 Vic. c. 42, s. 19). It is to be observed, however, that the accused person has the right of being defended from the very first, either by counsel or by attorney—such, at least, is the invariable practice, but it might, I think, be a question whether 6 & 7 W. IV., c. 114, gives a statutory right to that effect. This is otherwise in France.

parallel might, if necessary, be drawn out to almost any length.

In France, on the other hand, a criminal trial is nothing else than the last stage of an elaborate public inquiry, carried on by an organized public department, of which the tribunal which ultimately tries the prisoner is in some degree the head. The general principle upon which the system rests is embodied in the first article of the *Code d'Instruction Criminelle*. Its terms are—'L'action pour l'application des peines n'appartient qu'aux fonctionnaires auxquels elle est confiée par la loi.' The nature of the machinery provided for the purpose of discovering and punishing crimes is as follows:—There are in France twenty-seven *Cours Impériales*. At each of these there is a *Procureur-Général*, who has various deputies and substitutes. In every *arrondissement* there is a *Juge d'Instruction* (chosen for three years, from the Judges of the Civil Tribunal), and in every *Tribunal de première instance* there is a *Procureur de l'Empereur*. The commissaries of police, the agents of police, the gendarmerie, and other inferior officers, are under the orders of these authorities, who form, as the French phrase is, a 'hierarchy,' extending from the gendarmes to the Procureur-Général. The Procureur-Général himself is a sort of Judge-Advocate, being so far a member of the Cour Impériale that he sits on the bench during trials, and interferes *ex officio* on many occasions in the course of them. The functions of these various officers (who constantly correspond with each other, and stand in the closest official relation) are almost entirely inquisitorial. They receive and collect evidence of every kind in reference to any crime which has been committed, and constantly interrogate the accused upon every point of the charge, and confront him from time to time with the witnesses. They have it in their power to place the accused in solitary confinement (*au secret*), and constantly exercise it, the object being to prevent him from communicating with his friends, and from forming any systematic defence. They keep him in ignorance of the depositions which may have been made for and against him, and then question him on the facts to which they refer. By comparing together these various sources of information, they gradually elaborate a theory on the subject which, in complicated cases, has often innumerable ramifications, and is supported not only by arguments of a most refined character, but also by considerations drawn from the manner in which the witnesses give their evidence, the degree of frankness shown by the accused in his answers, and many other circumstances. This is called 'instructing the process;' and the final results of the '*instruction*' are embodied in an *acte d'accusation*—a document which not only recapitulates all the grounds from

which the *Ministère Public* infers the guilt of the accused, but also frequently states and refutes by anticipation the arguments for the defence. An intimate connexion exists between the officers who 'instruct' the process and the Cour Impériale, which finally tries the case. A committee of that body, consisting of three judges, form a sort of grand jury, called the *Chambre des Mises en Accusation*. This body, after hearing the Procureur-Général, determine whether or not there is ground enough to put the accused person on his trial, and they may if they please cause additional evidence to be collected, on the same terms as the inferior magistrates. The Cours Impériales have also the right of instituting proceedings in the first instance. When the question of the mise en accusation is under discussion, the person accused, or the *partie civile* (*i. e.*, any one who seeks to recover damages for injury done him by the crime), may lay *mémoires* before the Judges, who must hear them read before they decide. If, to use our own phrase, the Chamber finds a true bill, the affair is sent before the *Cour d'Assises* of the department, a sort of Circuit Court, in which one of the Judges of the Cour Impériale sits as President; or if the department be that in which the Cour Impériale itself is situated, the case is tried before a committee of that body sitting as a Cour d'Assises. After the opening of the *assises*, the prisoner is interrogated in private by the President. The witnesses are cited by the Procureur-Général or the prisoner, and the President has a discretionary power of calling in any additional witnesses whom he thinks it desirable to hear. The trial begins by the reading of the acte d'accusation; the Procureur-Général then presses the case against the prisoner, speaking generally with far more warmth, and expressing a much more decided opinion, than would be thought becoming in this country. The President then interrogates, first the accused, and then the witnesses, the Procureur-Général deciding on the order in which they are to be called. There are no rules of evidence; and in the first instance the witnesses tell their own story in their own words, and without any interruption whatever, the effect of which often is that they make long speeches not very material to the question. After the deposition is completed, the President cross-examines; and after his cross-examination is over, the counsel for the prisoner may put any further questions if he pleases, but he can only do so through the President. This privilege is hardly ever exercised, and this in itself forms a broad distinction between a French and an English trial; for, in the latter, the cross-examination of witnesses is one of the most important and most characteristic parts of the proceedings. After the examination of the witnesses, the advocate for the partie civile, the Procu-

reur-Général, and finally the advocate for the prisoner, address the jury; lastly, the President sums up. But this part of the proceedings has less importance in France than with us, and the *resumé* is as often as not confined almost entirely to a recapitulation of the arguments of the counsel.*

It is obvious, from this short sketch of French procedure, that it has little reference to the litigious view of criminal justice. Hardly any discretion or independent action is allowed to the prisoner from the very first. He cannot manage his defence in his own way, but, on the contrary, the *Ministère Public* manages it for him, counterchecking it as the proceedings go on, and too often concluding in favour of his guilt from any confusion or falsehood on the part of witnesses favourable to him. The issue of the trial is virtually almost decided before it begins, because it is only the last act of a continuous process; and thus it is hardly an exaggeration to say that the jury in a French Court is an anomalous excrescence. As its introduction into France is no older than the Revolution, and as the greater part of the Code Napoleon is a mere recast of laws which existed long before that time, it may very probably be the case that the whole scheme of French criminal procedure may have been adapted to the ancient system, in which the object was to convince the minds of the Court; and it must always be remembered that the *Tribunaux Correctionnels*, which can imprison for ten years, and deprive men of civil rights, and before which nearly nineteen-twentieths of the French criminal trials take place, try causes without juries.

In order to place before our own minds the character of the French system, we must suppose the attorney for the prosecution, the committing magistrate, and the counsel for the Crown, to stand to each other in the relation of official superiors and inferiors, and we must further suppose the counsel for the Crown to be a sort of assessor to the Judges of Assize. To complete the system, we must substitute for the fifteen Judges a much more numerous body, scattered over the country in threes and fours, each group having under their official authority all the committing magistrates and all the prosecuting counsel and attornies within a wide district, and discharging themselves the functions of grand jurymen. We must also suppose the procedure to be secret until the day of trial, and the accused to be liable to close confinement, varied only by as many interroga-

* As to the Juge d'Instruction, see *Code d'Ins. Crim.* ch. vi.; the Procureurs de l'Empereur, ch. iv.; the Mises en Accusation, ch. ix.; also Bk. II. Tit. II. ch. i. As to the composition of the Cours d'Assises, Bk. II. Tit. II. ch. ii. The functions of the President, Art. 266-70; of the Procureur-Général, Art. 271-83; the procedure before the Cours d'Assises, 310-356.

tories and private confrontations with witnesses as the Judge 'instructing the process' might think advisable. If a prosecution is to be considered as a public investigation, it is obvious that those who are to conduct it must stand in some relation of this sort to each other. A system in which the prosecuting attorney, who collects the evidence; the committing magistrate, who weighs it; the grand jury, who keep a sort of nominal check upon it; the counsel for the Crown, who exercises an absolute discretion, not only as to the order in which the witnesses are produced, but as to their being called or not, and as to the questions which shall be put to them; and finally, the Judge and jury, who decide the case, are all absolutely independent of each other, is fitted only for the purpose of ascertaining, by a series of successive tests, the weight of the prosecutor's assertion that the prisoner is guilty. The result of the French system, on the contrary, is the gradual elaboration of a theory on the subject of the crime, supported by a mass of evidence which has been collected and arranged by a set of public functionaries intimately connected together, and bound by all the ties of official *esprit de corps* and personal vanity to maintain the accuracy of the conclusion at which they have arrived.

It is difficult by mere generalities to convey an adequate notion of the differences of the two systems. I have already given several specimens of the results obtained by the English procedure; and, in order to show how the opposite principle works, I will proceed to examine with some minuteness a case which excited great interest in France some years back—the trial of the monk Leotade, for rape and murder.

The case, told as an English lawyer would tell it, is as follows:—On the 16th of April, 1847, at half-past six o'clock in the morning, the body of a girl of fourteen, called Cecile Combettes, was found in the corner of a cemetery at Toulouse, close to the wall of the garden of a monastery, and rather further from another wall which separated the cemetery from a street called the Rue Riquet. The body rested on its knees, toes, and elbows, and the left cheek and temple were on the ground and were covered with mud. The ground was wet, but there were no footsteps upon it. A patch of moss, with the earth to which it adhered, had been detached from the convent wall, and some fragments of it were found in the hair of the body. This moss appeared to have been loosened by the rubbing of certain branches of cypress which overhung the wall of the Rue Riquet, and reached that of the monastery. On the top of the monastery wall were several broken plants, and especially a geranium, which had lost all its petals. A petal of geranium and some sprigs of cypress were found in the hair

of the body. On the garden side of the monastery wall there were also one or two plants which had been disturbed. There was found in the garden itself a piece of cord, and in the hair of the body a thread of tow. There were also some footsteps in the garden, and marks of the feet of a ladder. Of several ladders found in the monastery, one corresponded to the marks in width, but not in the form of the extremity—but there had been rain in the night, which would alter the shape of the marks. On the other hand, there was a lamp in the Rue Riquet itself, which threw its light on the wall of the cemetery, and a sentinel was stationed further up the street. From these circumstances it was suggested that the body must have been, in some manner or other, dropped over the monastery wall into the place where it was found.

The last time when the deceased was seen alive was on the morning of the 15th of April, soon after nine, when she went with her master, a bookbinder named Conte, to the convent. He went upstairs to the director on business, leaving her with orders to wait for him to bring back some empty baskets. He also gave her his umbrella to hold. When he came back she was gone, and the umbrella was leaning against the wall. From the testimony of several witnesses, it was proved that she had left the passage where her master had stationed her within a few minutes after his departure, and by about a quarter-past nine. Suspicion fell in the first instance on Conte, who was arrested. When under arrest, he said that he had seen Leotade and another monk, called Jubrien, talking together in the passage when he entered it; and to a certain extent he was corroborated as to Jubrien by Jubrien's own statement. Leotade slept, on the night after the murder, in a room from which he could have reached the garden by the help of a key found in his possession; and on the day after the murder, on hearing that a girl in Conte's service had been found dead in the cemetery, but before the cause or the circumstances of her death were known, he used expressions which certainly might be construed into an imputation on Conte. The deceased, on a medical examination, appeared to have died of a blow on the head which broke the skull, and had obviously been subjected before her death to great violence of another kind. From the state of the contents of the stomach, it was proved that her death must have taken place within a short time after her last meal, and consequently not long after she was last seen alive. A feather, some grains of corn, and stalks of hay were found on the body, in a position which, to a certain degree, indicated that they had been brought from the scene of the crime; and in the monastery garden, near the corner formed by the two walls, were several barns, in one of which was a heap of corn,

and in another some hay; but there was no evidence that they bore marks of disturbance. To these buildings Leotade's occupations in the convent gave him access, and in one of them he kept rabbits and pigeons.

This was the whole case against Leotade, as it would have stood according to our rules of evidence. No one would maintain that, upon that evidence alone, it would have been desirable to convict him. Since, however, he was convicted, it will furnish some light on the expediency of our rules of evidence, to see what in this case was the character of the testimony which they would have excluded, and which did, in fact, produce a conviction. It consists of two great divisions—the prisoner's own answers when interrogated, and the detection, or supposed detection, of efforts made by the other monks to suppress evidence and to suborn false witnesses. The arrests of Conte, of Leotade, and of Jubrien (who was at one time suspected), took place in April, 1847, and the trial began on the 7th and lasted till the 26th of February, 1848. It was then broken off on account of the Revolution, and was begun again on the 16th of March and ended on the 4th of April, the seventeenth day of the inquiry. During great part of the time that the prisoners were in confinement, they were constantly interrogated. Conte, whose imprisonment was comparatively short, had to repeat no less than thirty times the statement he made as to having seen Leotade and Jubrien together. Leotade himself was examined and re-examined continually about the way in which he had passed his time on the day in question. He was questioned, for example, on the 18th, 23rd, and the 26th of April, on the 3rd and the 6th of May, and on the 17th of December; and on his trial he was taxed with all the inconsistencies which could be discovered between his statements on these different occasions, and with any discrepancies which existed between any one of them and his statement in Court. By these means a good deal of confusion was detected, or said to be detected, on several points, the most important of which were—first, that in his earlier statements he did not mention his having passed part of the morning on which the crime was committed in writing his *compte de conscience*, whereas at his trial, and on one preceding occasion, he did; and secondly, that he failed to give a satisfactory account of the shirt which he had worn on the day in question. All the convent linen was used in common, each monk having a clean shirt supplied to him from the common stock every Saturday. Certain marks were found on one of the dirty shirts which had been worn during the week in question, which seemed to indicate that it had been worn by the murderer, though the indications were far

from being conclusive. There were about one hundred and eighty monks, some of whom, and amongst them Leotade, belonged to the 'Pensionnat,' and others to the 'Noviciat.' The shirts of the two classes were differently marked, though they were occasionally mixed. The shirt in question belonged to the 'Noviciat,' so that it was unlikely, though possible, that Leotade might have worn it. There was not a shadow of evidence that he actually had worn it, except the fact that he maintained that he had not changed his shirt on the Saturday after the murder, and that the reason which he gave for not having done so was apparently false. It was also stated, in the *acte d'accusation*, that all the rest of the monks had accounted for their shirts, and that none of them owned to having worn the shirt in question; but no independent evidence of this vital assertion was given to the jury.

The second division of the evidence is infinitely more voluminous than the first, and consists almost entirely of what, under our system of procedure, would have been the cross-examination of the prisoner's witnesses. The principal objects of the defence, as we should have them arranged, were, in the first place, to prove that the deceased left the convent alive; and secondly, to establish an alibi on behalf of the prisoner. To this the prosecution replied by charging all the witnesses on both points with systematic perjury and subornation of perjury. It would be wearisome to enter into a minute examination of the merits of these conflicting statements. It is sufficient to say that the general nature of the argument, founded on this part of the evidence, was, that Leotade must be guilty, inasmuch as much false testimony was given on his behalf; and that in order to make out that the testimony was false, such a mass of collateral matter was gone into, as to what various people said to each other, as to the letters which they wrote, and as to the expressions which they had dropped in casual conversation, that it is hardly possible to understand or to follow the discussion. The most trifling gossip was not excluded. One man, for example, was permitted to inform the Court that he had told somebody else, on hearing of the news, that he felt sure that if the girl had entered the convent she would never leave it alive; and the President told him, with great gravity, that if the fact was so, his remark was 'une appréciation quelque peu prophétique.' Still more singular is the observation of the acte d'accusation itself, that the place in which the crime was conjectured to have been committed 'semble predestiné pour un crime.' But the strangest of all these supplementary articles of evidence was supplied by the Juge d'Instruction himself, who said that, on one occasion during the course

of his examination of Leotade, he thought from his manner that he was about to confess, and that though he had certainly explicitly denied the crime, still 's'il faut dire toute ma pensée j'ai cru et je crois encore que Leotade a été au moment de me faire un aveu.' Moreover, continued the magistrate, 'en interrogeant Leotade pour la première fois son trouble était extrême et comme à la fin on lui disait retirez-vous, il manifesta une joie *qui pour moi trahit la possibilité de sa culpabilité,* et sans l'intervention de M. le Procureur-Général je le mettais immediatement en arrestation.' Such is the kind of evidence which, in a case of this importance, is admitted under the French system. That it is admitted at all, is a consequence of the whole character of the proceedings, which far more resemble the proceedings before English Commissioners of Inquiry than the proceedings before an English Court of Criminal Law. The members of the Cour Imperiale, including the Procureur-Général, the Juge d'Instruction, and the Procureurs du Roi, jointly and severally devote all their energies to the collection of every sort of information or suggestion in any way bearing on the case in hand. The mass of matter thus collected is enough to bewilder any jury, and must virtually make them almost entirely dependent on the direction of the Court.

The manner in which the evidence is laid before the jury is not less illustrative of the principle of the whole trial than the character of the evidence itself. As I have already observed, the 'Instruction' does not leave, or even permit, the prisoner to frame his own defence in his own way, but takes that business out of his hands, and draws unfavourable conclusions from the shortcomings of his witnesses. If an alibi is relied upon in England, the prisoner's attorney sees the witnesses, prepares the proofs, and instructs his counsel of their character, and it is at the trial that they are for the first time judicially considered. In France, the prisoner is interrogated as to where he went, what he did, and whom he saw, from the very first; and any person whom he mentions is immediately called before the Juge d'Instruction, and examined upon the subject apart from the prisoner. That a prosecutor, public or private, wishes to convict the prisoner upon the same principle which makes a sportsman desirous to bag his game, is a matter of perfect notoriety; the consequence is, that this system, which, at first sight, appears so humane, in reality has a constant tendency to resolve itself into duels between the authorities, the prisoner, and his witnesses. In Leotade's trial more than sixty witnesses were called, and the trial occupied nearly three weeks, to say nothing of the *instruction,* which was spread over seven or eight months. More than half of these wit-

nesses were called literally for the sake of contradicting each other. Thus, for example, an old woman, called Sabatier, said that she had seen the murdered girl under circumstances which would show that she had left the monastery alive. No less than ten witnesses were called to refute her, yet her evidence upon the subject was given, and its falsehood proved, months before the trial; and the whole matter might, therefore, have been safely laid out of account. In an English Court she would, of course, have been called, if at all, for the prisoner; and if his advisers had seen reason to distrust her—as they probably would, for she was a mere foolish gossip—she would not have been called at all. Another illustration of the same thing occurred in respect of the evidence of the different monks. The acte d'accusation is divided into two parts, of which the first is occupied by arguments to show that the crime was committed in the monastery, and the second by arguments to show that it was committed by Leotade. According to our principles, the first of these questions would be utterly immaterial except in so far as it bore upon the second; but the French Court so managed matters as to make the question of Leotade's guilt almost subordinate to the question of the guilt of some one member of the convent. Four-fifths of the evidence given at the trial consists of refutations by the prosecution of rumours circulated, or supposed to have been circulated, on behalf of the monks, and of exposures of the falsehoods told upon various isolated parts of the case by other monks not shown to have been connected with the prisoner. A single illustration will show the endless confusion which such a mode of proceeding is calculated to produce. Evidence, says the acte d'accusation, which would give a different turn to the procedure, had been announced by the newspapers. It was said that the lad Vidal (who was in the *parloir* when the girl entered the passage) had seen the girl leave the monastery. The Juge d'Instruction 'prepared to receive this evidence, and, at the same time, took measures to check it' (de la contrôler.) After much inquiry, he found out that Vidal was in communication with the principal members of the monastery; and the lad himself gave his evidence with many qualifications, and much hesitation. In consequence of these inquiries, the acte d'accusation expressly declares that 'la cour n'a-t-elle pas hésité à déclarer que la déposition de Vidal ne meritait pas la confiance de la justice.' Notwithstanding this, he was one of the principal witnesses against the prisoner, for he stated that he had been present at a sort of meeting in which various influential members of the monastery took part, and at which they concocted evidence tending to prove that the girl had left their establishment.

Upon this subject many witnesses were examined, and a great deal of contradictory assertion and very violent language passed between all parties. It does not seem to have occurred to any one that the whole debate was quite beside the question. That Vidal could not prove that the girl had gone out alive, was admitted by himself in his very first answer; and if that point failed, it was perfectly immaterial to show that any amount of perjury and subornation of perjury had been employed to establish it. That such a state of things should exist would, no doubt, be very discreditable to a religious establishment, but it is absurd to say that it would tend to prove Leotade's guilt. If he personally had suborned false witnesses it would have been very different, but as he was in close custody, that was out of the question; and it was surely most unjust to make him responsible for what, at most, was the criminal conduct of most unwise partisans.*

Perhaps the most curious feature in French procedure to an Englishman is the narrowness of the sphere within which the functions of the jury are confined. They are frequently obliged to take for granted, on the authority of the Court, the most important parts of the evidence. In the case of Leotade, the strongest facts against him were the imperfect and conflicting accounts which he gave of the employment of his time on the day in question. The fact that this was so, was proved solely by the *procès verbaux* taken at the different interrogations. Although Leotade urged repeatedly that he had been so tormented by questions, so intimidated and browbeaten, that he was quite confused, and did not know what he said, no evidence appears to have been produced to disprove his assertion. It seems to have been assumed, that official acts were not to be questioned, and that official assertions must be true. It is a slight but significant illustration of this temper, that when a brigadier of gendarmerie and a monk differed, the President told the latter that the former had a right to the confidence of justice both as a witness and as a 'functionary.' Nothing is more common than to hear English Judges warn the jury to be very careful about believing too easily the evidence of policemen, or skilled witnesses. An even stronger illustration is to be found in the fact, that the jury who tried Leotade were each supplied with a copy of the acte d'accu-

* The almost offensive closeness of the logic of English criminal procedure contrasts curiously with the looseness, both in argument and assertion, of what the French characteristically call the 'débats,' and must be something of a stumbling-block in the way of the theory that the French are a pre-eminently logical, and the English a 'thoroughly illogical' nation.

sation—a document which closely resembles, in its style, length, and objects, the opening speech of an English prosecuting counsel. As the evidence swelled to a size altogether unmanageable, this was almost equivalent to prejudging the case.*

Upon the whole, I can hardly doubt that an inquisitorial system of criminal procedure would be very unfit, both on political and on juridical grounds, for this country. It is inconsistent with trial by jury, which can only exist where the questions to be decided are very definite, and the grounds upon which they are to be decided are plain and weighty. Even if judges are able to found conclusions as to a man's guilt or innocence upon the expression of his face, the degree of confusion in his statements, the amount of presence of mind which he possesses, and the quantity of falsehoods into which he may be seduced by fear or by folly, as well as by conscious guilt—and that they can do so with any certainty I do not the least believe—juries assuredly cannot. If, therefore, we are determined to have juries, we must have rules of evidence, and an impartial judge to enforce them. In other words, we must have a litigious, and not an inquisitorial procedure. It must also be remembered, that the inquisitorial principle can only be carried out by a degree of interference with individual liberty which no one in this country would endure. The investigations which attornies carry on in the ordinary course of their business are not always very agreeable to those whom they affect; but who would submit to the humiliation of being summoned before some petty country police inspector, to give account of a chance expression about some trial which had attracted public attention; or of being subjected to a 'searching investigation into the whole' of one's 'past life,' conducted by the clerks of a local police-office, because it was just possible that the result might throw light upon some such inquiry? Such proceedings would make the administration of justice absolutely odious to all classes of society. The superior efficiency of the inquisitorial system is extremely questionable. Every acquittal is a misfortune, because it either implies that an innocent man has been accused, or that a guilty one has escaped; but acquittals are as common in France as in England, and their convictions appear to me to be, in difficult cases, far less satisfactory.

Whether the French system of criminal procedure is a more efficient instrument than our own for the discovery of guilt, is a question which admits of much doubt. The standard of certainty which it requires to support a conviction is unques-

* An account of Leotade's trial, entitled '*Procès du frère Leotade*,' was published at Leipzig in 1851.

tionably much lower than ours, and the field over which it collects evidence much larger; but it is a most remarkable fact, that the proportion of acquittals to convictions in cases tried before a jury is almost precisely the same in both countries, about one case in four ending in that result. Indeed, if we exclude, in counting the English acquittals, the cases in which the bill is thrown out by the grand jury, there are considerably fewer, as the proportion in England would on that calculation be rather less than one in five. General considerations, however, throw less light on the weak points of a system than an examination of the causes which may have produced its failure in instances where it undoubtedly has failed. I have already expressed my view of the general character and causes of English legal mistakes. I will proceed to examine shortly a French case of the same kind, which very lately attracted great attention all over France.

On the 2nd of July, 1848, a man named Lesnier was convicted of murder and arson, committed on the person and house of one Gay, from whom he had bought the reversion of a piece of land for a life annuity of about three pounds. On the night of the 15th of November, 1847, Gay's house took fire, and the persons who came to put it out found him dead on the floor with a blow on the head, apparently given by a hammer. There was no evidence whatever to connect any one with the fact; but Lesnier alone had any interest in the old man's death, and before it took place he had several times expressed to several persons a wish that he might die. Gay had had some wine in his possession at the time, which must have been removed before the fire, as no traces of it were found. The wine was not traced to Lesnier or any one else. A week after the murder, a man named Daignaud declared that Lesnier and his father had attempted to rob him on the road about a week before the murder,* and that he had struck the son with the point of his umbrella; but no reason seems to have been either asked or given for his delay in making the accusation. It was, however, considered to injure the characters of the Lesniers so much that both of them were forthwith arrested

* In the *acte d'accusation* against Daignaud, he is said to have sworn that he was attacked the *night before* his deposition (*Aff. Lesn.* I. 31). In the evidence of the Juge de Paix (II. 33), it is said that *some time after the murder* he complained of having been attacked *a week before it happened*. Such a blunder was either scandalously careless or grossly dishonest. Its manifest tendency (intentional or not) was to shield the authorities from the imputation of having been imposed on by an utterly contemptible falsehood. What credit could possibly be due to a man who kept back for weeks such a charge against persons whom he saw every day of his life?

on the charge of the murder of Gay. About five weeks after their arrest, a woman named Lespagne, who was the mistress of the younger Lesnier, and who had already been examined without any result, volunteered a statement that Lesnier had told her some days before the murder that 'in eight days Gay would be dead, and that he (Lesnier) would make him turn his eyes as he had never turned them before,' and that after the murder he had admitted that he had caused it. Six weeks after this she repeated some more expressions of a similar kind, and said that on the day of the murder Lesnier's *sabots* were spotted with blood, and that on the day when Daignaud said he had been robbed, Lesnier had complained of having been struck in the side. On this evidence principally, Lesnier the son was convicted of arson and murder with extenuating circumstances, and sentenced to *travaux forcés* for life. According to our views of evidence, Daignaud's declaration would have been inadmissible; and according to any view, Mme. Lespagne's, one would suppose, must have been most suspicious, on account of the slow and gradual manner in which it was brought out. No English jury would for a moment have listened to such evidence, and the simplest cross-examination would have destroyed its value, for the only reason assigned for the delay in giving it was totally inconsistent with its truth. It was, that the witness was afraid of Lesnier. She was a married woman, and said that Lesnier had employed the most violent threats in order to effect her seduction; and yet she asserted that, after threatening to shoot her and strangle her, he asked her to poison her husband, and told her that he intended to commit a murder. On the other hand, she had an obvious motive for accusing Lesnier, inasmuch as on his arrest she was reconciled to her husband. How such shallow and incoherent lies could obtain credit for an instant is inconceivable, especially as the subsequent proceedings showed that plenty of witnesses were prepared to prove that the seduction was all on her side and not on Lesnier's. Many other circumstances, mostly very trivial, were stated in the acte d'accusation as making against the Lesniers. One, however, is noticeable: they had suggested that Lespagne, the husband of the younger Lesnier's mistress, had himself committed the murder, upon which the acte d'accusation remarks that they 'cherchaient a détourner les soupçons de la justice en les dirigeant sur un homme honorable.' Seven years after Lesnier's conviction, Lespagne was himself convicted by a second jury of the very same murder, and of having subborned the false testimony of Daignaud and Madame Lespagne against Lesnier. Hereupon a third jury was empanelled to try whether Lesnier or Lespagne were the real culprit; and

nothing can be more curious than to compare the acte d'accusation of 1848 with the speech of the Procureur-Général on Lespagne's first trial in 1854. It appeared that Lespagne was a man of some property, and that he was connected with the Maire of the Commune, who had made himself rather conspicuous in bringing forward and eliciting the evidence of Madame Lespagne. Lesnier, on the other hand, being a mere Government schoolmaster, was a new comer, had no connexion with the place, and was on bad terms with the *curé*, who was jealous of his functions, and, as he said, courted his sister. Under these circumstances, says the Procureur-Général, 'les preventions locales étaient maitresses absolues du terrain, les indices les plus imaginaires contre Lesnier étaient avidement recherchés et recueillies. L'atmosphère était pleine de soupçons sur lui et au besoin de justifications pour Lespagne. Abandonné de tous, l'innocent restait sans defense, tandis que le coupable s'abritait impunément derrière les puissances de la commune. Rien enfin ne résume mieux la situation que ce mot caractéristique de Lespagne lui-même : 'Tant que Sarrazin père et fils et le cousin Lacrompe seront là, je n'ai rien à craindre.''

'Comprenez vous, maintenant, Messieurs les Jurés, ce que s'est passé en 1847? *La justice a suivie alors ses errements ordinaires: elle a fait ce qu'inevitablement elle doit faire lors-qu'elles informe sur un crime. Comme elle n'a point le don de la divination, elle a pris les premiers renseignements auprès des autorités locales; elle a respiré leurs impressions,* et circonvenue, abusée par elles, elle s'est malheureusement laissée entraîner dans leur voie. Pour ses yeux, comme pour les leurs, des indices contre Lesnier se sont trouvés mis en lumière; la culpabilité de Lespagne est restée dans l'ombre.

'C'est au milieu d'une telle situation, en présence d'esprits ainsi disposés, que se produiserent tout-à-coup, à la charge de Lesnier, deux temoignages accablants; *accueillis avec une sorte d'acclamation par l'opinion factice du pays,* et combinés, d'ailleurs, avec une détestable habileté, ils ont pu facilement surprendre la confiance du juge.'*

It would be impossible to find a juster or a more vigorous condemnation of the whole principle of French criminal procedure. If the task of bringing the guilty to justice is taken out of the hands of individuals and confided to an organized body of public officials, the result must eventually be that the prejudices and rumours of every small administrative division of the country will be embodied in a tangible

* *Aff. Les.* I. 157.

shape, and stamped by practised skill with an official value to which they are by no means entitled, whilst anything which interferes with the theory which the Government officers are elaborating will be treated as impertinent and suspicious. The only solid security for individual justice, in such cases, is to be found in the maintenance of a deep distinction between judges and prosecutors, and in a resolute refusal, on the part of the Government, to give any official authority or assistance to any man whatever, functionary or not, simply because he accuses another of a crime.* Whether it might not be desirable to retain, at the public expense, standing counsel and attornies for the prosecution of criminals, is quite another question.

I would not be understood to be an indiscriminate eulogist of our own system of procedure. Heartily approving of its main principle, I think that it labours under many very grave practical defects. It is an admirable system if it is fully worked out, but this only happens when the accused

* It is unnecessary to examine in detail the trials which terminated the '*affaire Lesnier*.' I can only say, that it seems to me that Lespagne was convicted on evidence almost as unsatisfactory as that which was urged in the first instance against Lesnier. He was convicted of having suborned Daignaud on Daignaud's own word, Daignaud being by his own account a man who would swear away another person's life for fifteen francs. The principal evidence against him as to the murder was that of his wife, whose whole story was agreed on all hands to be one tissue of lies. All that she could say was that he had confessed the crime to her. Finally, he confessed himself that he had accidentally killed Gay, but his confession was obviously false in many points. He several times retracted it, and he urged that it had been extorted from him by threats and promises. This was denied; but the nature of the inducements which on the French system are considered allowable, may be inferred from the following extract from the evidence of M. Viault, the *Juge de Paix*:—

'En qualité de juge de paix et à cause de l'influence que je croyais devoir exercer sur l'accusé, lorsque je vis qu'il rétractait constamment pendant les audiences des 12, 13, et 14, les aveux qu'il avait fait lors de son arrestation, je crus devoir me rendre auprès de lui à la prison pour l'engager à dire la vérité. M. Princeteau, son défenseur, qui m'y avait précédé, avait inutilement tenté de l'y decider. Moi-mêmè je le trouvait inébranlable; peu après je dis à ses parents de tenter à cet effet de nouveaux efforts, je me rendis avec eux et avec M. Princeteau derechef à la prison. Pressé alors très vivement il finit par dire: Eh bien, oui! vous le voulez ma tête tombera; je suis forcé d'avouer que c'est moi qui suis la cause involontaire de sa mort; je l'ai poussé, il est tombé à la renverse, et sa tête aura sans doute porté sur un instrument aratoire, de la vient sa blesser.'—*Aff. Les.* II. 33.

The wonderful looseness of the reports admitted under this system is curiously exemplified by the evidence of a woman who said that her father-in-law told her that Mme. Malefille told him that young Malefille had said (she did not say how he knew it), that Lespagne had committed the murder. It afterwards appeared that young Malefille had heard all he knew from Mme. Lespagne, who was, *ex hypothesi*, perjured, and who lied on every occasion from first to last.

person has money enough to avail himself of all the privileges which the law gives him. Palmer's trial was perhaps as perfect a specimen of a criminal proceeding as any time or country could produce. A man accused of no less than three distinct murders, and the object of the most vehement popular hatred, was tried for one of them without even a passing allusion to the other two. Every fact bearing on the case was brought out, either on the one side or the other, with perfect fulness and marvellous clearness, and without the admission of a single redundant fact, or the exclusion of a single material one. The result is, no doubt, highly satisfactory; but it must be remembered that Palmer had friends who spent several thousand pounds in his defence, and that if he had been a poor man he would have found it a terrible thing to have to defend himself against the law officers of the Crown. Our system throws a very heavy task indeed on the poor and ignorant—the task of managing their own defence. It no doubt surrounds them with securities against a condemnation on weak grounds. It enacts, as a condition of inflicting punishment, what is often considered a foolishly high standard of proof. It allows a man ample opportunities for defending himself, but it does nothing whatever to help him in doing so. It must never be forgotten, that to question an innocent man is to assist him; or that in the confusion and distress incidental to a public trial it is a very difficult thing for the untrained intellect to seize the bearing of the various points of the evidence. The importance of this observation can only be appreciated by those who see the common, unromantic, uninteresting routine of ordinary criminal business. On these occasions, criminal procedure is a very different thing from what it is on the great legal field-days which attract universal attention. A great political trial for high treason or sedition, or a murder case in which the Crown and the prisoner are represented by the most experienced members of all branches of the legal profession, shows the working of the rules of evidence, and the character of the standard of certainty required by the jury, in a very different light from that in which the very same rules and principles are displayed by the trials which take place for petty offences at the Assizes or the Quarter Sessions. In Palmer's trial, for example, the fact that no explanation was given of the purchase of the strychnine was all but conclusive, because the defence was prepared with so much skill and care that it would certainly have been explained, if possible; but it is by no means equally clear that the absence of any explanation of some suspicious remark made by a man accused of fowl-stealing ought to weigh strongly against him, because it may very likely never have struck him that it was

suspicious. Not one man in five who is tried is defended, and not one in twenty has any very clear conception of the bearings of the evidence against him. To call upon the common run of criminals to defend themselves is a sort of mockery. To repeat a statement made elsewhere*—

I cannot describe the difficulties under which such persons labour without resorting to a familiarity of illustration which I hope will be excused. The common run of criminal trials passes somewhat thus:—Ten or twelve awkward clowns, looking, as a very eminent advocate once observed, like overdriven cattle, are crowded together in the dock. Their minds are confounded by formulas about challenging the jury, standing on their deliverance, and pleading to the indictment. The case is opened, and the witnesses called by a man to whom the whole process has become a mere routine, and whose very coolness must confuse and bewilder a densely ignorant and most deeply interested hearer. After the witness has been examined, comes a scene which most lawyers know by heart, but which I can never hear without pain. It is something to the following effect:—

Judge.—Do you wish to ask the witness any question?

Prisoner.—Yes, sir; I ask him this, my lord. I was walking down the lane with two other men, for I heard—

Judge.—No, no; that's your defence. Ask him questions. You may say what you please to the jury afterwards, but now you must ask him questions.

In other words, the prisoner is called upon without any previous practice to throw his defence into a series of interrogatories, duly marshalled both as to the persons to be asked and as to the subject to be inquired into—an accomplishment which trained lawyers often pass years in acquiring most imperfectly. After this interruption has occurred three or four times in the course of a trial, the prisoner is not unfrequently reduced to utter perplexity and forgetfulness, and thinks it respectful to be silent. Hardly any ignorant person can tell a story of the simplest kind without endless maundering, irrelevant, and extremely wearisome details, and hardly any judge has the patience to sift out the grain of wheat from the bushels of chaff which are on such occasions put before him.'

It must not be forgotten, in relation to this matter, that the standard of certainty required by juries in common cases is much lower than in matters of life and death. Nor is this at all to be regretted, for no one who considers the subject can doubt that the reasonableness or unreasonableness of suspending the judgment on a particular state of facts, depends very greatly on the importance of the consequence involved. If the object of taking a dose of medicine were to relieve a

* *Papers of the Juridical Society*, vol. i. p. 474.

trifling ailment, all reasonable doubt as to the wisdom of taking it would be removed by very humble advice upon the matter; but if it were certain that the dose would either kill or cure the patient, the very same advice would go for very little. For these reasons I should conjecture that the largest part of the very few wrong convictions which take place in this country occur in obscure and uninteresting cases. I should imagine that under the French system the very opposite would be the case. It is not, however, in such cases alone that our system bears hardly upon poor men. Trials for murder frequently occur, in which the nicest scientific questions arise, and in which the accused person is too poor to call skilled witnesses on his side of the question, or even in some cases to employ counsel. In the spring of the present year, a man named Nation was tried for murder at the Somersetshire Assizes. Amongst other things, a knife was found upon him, on the blade of which, Mr. Herapath, the well-known chemist, discovered, with a microscope, a scale, which, as he said, must have come from the inside of a human throat. Now, whether this opinion was true or not, no one who remembers Palmer's trial can doubt that if the prisoner had been rich enough, he might have called other medical men who would not have agreed in it. At the last Bodmin Assizes a case occurred of a somewhat similar character. An old man was accused of poisoning his grandchild with phosphorus. Only a very few cases of the use of phosphorus as a poison have occurred, yet in this instance Mr. Herapath, who was called for the Crown, was again the only witness. The case ended in an acquittal; but if the old man had been convicted, it would have been most unsatisfactory to have had only onesided testimony on so difficult a subject. In this instance the prisoner could not even afford the expense of being defended by counsel, and, according to the common practice in such instances, a barrister was requested by the Judge to undertake his defence on the spot. It is surely impossible that justice should be done to subjects involving such delicate questions, both legal and medical, on a moment's notice.

All these anomalies are direct consequences of the principle that a criminal trial is litigious, and might, I think, be easily removed by a little contrivance. The first and most serious defect would be, in a great measure, remedied by making the prisoner a competent witness, liable, like any other person, to be questioned according to the ordinary rules of evidence. The repugnance usually felt to this measure arises partly from an undefined and really unintelligible notion, that a man has a sort of right, as against society at large, to refuse to answer questions which might criminate himself without incurring

suspicion by such conduct. It is a very difficult thing to argue against a feeling in favour of which no plausible reason can be suggested; but another ground upon which this proposal is objected to, is more intelligible: it is, that no one can be trusted to perform an operation so delicate. I do not see why the function might not be devolved upon the counsel. The counsel for the Crown would, of course, be allowed to treat the prisoner as a hostile witness—that is, to ask him leading questions. Each side would use their discretion about calling him; and if the prisoner were not defended by counsel, his own statement might be treated, either by the counsel for the Crown or by the Judge, as evidence upon which he might be cross-examined. If the prisoner, being defended, were not called, this would be, under some circumstances, very suspicious.* The principle of the competency of the parties to an action to testify in civil cases, is found to work extremely well, and it would be in strict accordance with the whole of our system to assimilate criminal proceedings to them. It is clear that there would be no sort of analogy between such a practice as I suggest and that which obtains in the French courts. The two systems would still proceed as they do now, upon fundamentally different principles.

Our system of criminal procedure undoubtedly errs more seriously, and much oftener, in acquitting the guilty than in convicting the innocent, and its defects in this particular are almost entirely the consequence of the want of any person officially bound to conduct prosecutions. The whole of this subject was elaborately discussed before a late Committee of the House of Commons, and their recommendations, together with the evidence by which they are supported, are so easily accessible, that it is unnecessary for me to do more than refer to them. I may, however, observe that it seems to me quite possible that the system recommended by their report might be adopted without trenching in any degree on the litigious character of our procedure. So long as the public prosecutor had no powers beyond those which private prosecutors have now, the principle would be untouched.

Having thus attempted to sketch the composition, the prin-

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* It might, perhaps, be as well in such a case to lay down a rule as to the right to reply, analogous to that which exists as to witnesses to character—viz., that in general the counsel for the Crown should not reply if the prisoner only were called, though he might have the strict right to do so if occasion required. Many difficulties are connected with the right to reply. As the Judge sums up, it would, I think, be only fair that the prisoner should have the last word. In Scotland this is so. The evidence comes first, then the speech for the Crown, and then the defence. It is so in France, also.

ciples, and the working of our Criminal Law. I shall conclude by a short comparison of so much of the statistics of criminal justice lately published, both in this country and in France, as illustrates its efficiency and the severity of its punishments. With the moral aspects of the matter my present subject has no connexion.

Sentence of death was, in England, in the year 1855, either passed or recorded (generally the latter) against 50 persons, but only 7 of these were executed — all for murder. Of the remaining 43, one was held to penal servitude for life, 24 were transported for life, 8 were transported for 14 years and upwards, 6 were held to penal servitude for 6 and 4 years, and 4 were imprisoned. In France, 61 persons were sentenced to death, of whom, 28 were executed, 1 killed himself in prison, 30 were held to 'travaux forcés,' and 2 were imprisoned for life. It is singular that 19 of the men executed in France committed their crime from 'cupidité;' whilst 4 of the 7 men executed in England were actuated by jealousy, and only 1 by a wish to rob. In England, 48 persons were transported for life, 55 for more than 15 years, 220 for from 10 to 15 years, and 93 were held to penal servitude for more than 6 years, 406 for more than 4 and less than 6 years, and 1542 for 4 years. In France, 240 persons were sentenced to 'travaux forcés' for life, 3 to the same punishment for 40 years, 5 for 30 years, 4 for 25 years, 211 for 20 years, 1 for 18 years, 78 for 15 years, 1 for 14 years, 45 for 12 years, 192 for 10 years, 4 for 9 years, 192 for 8 years, 77 for 7 years, 140 for 6 years, and 177 for 5 years. In all, 1130 persons were sentenced to this punishment for upwards of 5 years; whilst 1040 were sentenced to *reclusion*, and 2445 to simple imprisonment for similar terms. So that, in all, sentences for upwards of 5 years were passed on 4615 persons in France; whilst in England there were but 822, and only 2364 included sentences for 4 years.

It is obvious, from these facts, that French sentences are both heavier and commoner than English ones. The population of England and Wales is about half as great as that of France,* yet executions in France are four times as numerous as in England,† and sentences of *travaux forcés à perpetuité*, or *reclusion perpetuelle*,‡ more than five times. It must also be remembered, that the sentence of transportation for life in

* England and Wales, 17,817,609; France, 37,381,228.—*Alm. de Gotha*, 1855.

† Of the fifty persons sentenced to death in England, twenty were convicted of crimes which are not penal in France. Sentence of death is never passed in such cases, but only recorded—a British form, which means transportation for life.

‡ Ten persons were sentenced to this punishment.

England means, in fact, transportation for about ten years; and that the real value of all other sentences of transportation or penal servitude is very much smaller indeed than their nominal value. This is not the case in France to anything like the same degree. It is, however, in respect of punishments for venial offences that the extraordinary lenity of our law is most apparent. Justices of the Peace with us can sentence to six months' imprisonment for aggravated assaults; and, in certain cases, if a prisoner chooses to plead guilty of simple larceny, they may, if they please, sentence him to a similar punishment; but, except upon a conviction before a jury, no heavier sentence can be pronounced.* Of about 20,000 persons convicted by juries in 1855, no less than 17,327 were sentenced to various terms of imprisonment, of whom 13,420 were imprisoned for less than six months. The numbers are as follows:—

Above 3 years	2
„ 2 „ and less than 3 years	15
„ 1 „ „ 2 „	749
„ 6 months „ 1 „	3114
„ 3 „ „ 6 months	5455
„ 2 „ „ 3 „	5027
Up to 1 month	2965

Of course, a large additional number of persons were sentenced to various terms of imprisonment not exceeding six months by police magistrates, but of these the returns take no notice.

The imprisonments inflicted in France were as follows:—

By the Cours d'Assises (in which trial by jury prevails)—

Reclusion perpetuelle	10
„ 20 years	8
„ 12 „	1
„ 10 „	124
„ 9 „	3
„ 8 „	127
„ 7 „	117
„ 6 „	248
„ 5 „	402
	1040

* Justices can inflict heavy fines in certain revenue cases, and they can commit for a year in default of sureties.

Imprisonment	10 years	3
„	7 „	3
„	6 „	1
„	5 „	419
„	4 „	317
„	3 „	509
„	2 „	599
„	1 to 2 years . . .	159
„	1 year	230
„	6 months . . .	48
„	Under	19
		2307

But in addition to these cases, the Tribunaux Correctionnels, which act without a jury, tried no less than 103,344 persons, of whom only 11,620 were acquitted; 3382 were condemned to surveillance by the police, and 356 to loss of various civil rights. Of the persons imprisoned for upwards of six months, by judges acting without a jury, the sentences were as follows:—

10 years	137
5 to 10 years	1016
5 years	1292
2 to 5 years	1591
1 to 2 years	7409
1 year	2498
6 months to 1 year	8496
	22,439

If we add to this total the 3328 persons sentenced by the Cours d'Assises to imprisonment or reclusion, we find that no less than 25,767 persons were sentenced in France to an imprisonment of upwards of six months, against 3880 who received such sentences in England, which is more than six times as many. In England, two persons only were imprisoned for more than three years. In France, the numbers were—

Sentenced by the Cours d'Assises—		
To Reclusion	1040	
„ Imprisonment	743	
		1783
Sentenced by the Tribunaux Correctionnels*		3240
		5023

* Calculating half of the sentences of from two to five years as above three.

or more than 2500 times as many. Whether our system is unwisely lenient, or the French system unwisely severe, is a question which it is not my purpose to discuss; but the fact of the difference is worthy of more attention than it has received. It may, however, be observed, that there is no such marked difference in the security of life and property in the two countries as to raise a strong and obvious presumption in favour of the severity of the French law.

The history of the lenity of English punishments is very curious. Almost all crimes were originally capital. Afterwards the whole subject fell into inconceivable confusion, in consequence of the capricious manner in which Parliament assigned the minimum of punishment in particular cases; and at last, by the 9 and 10 Vic., c. 24 § 1, minimum punishments were altogether abolished, the judges being empowered in all cases to give as little transportation or imprisonment as they pleased. This curious arrangement is justified in practice by the fact that any conceivable definition of crime includes many more cases than its authors had in view. Thus, in the *Code Pénal*, Art. 309, it is enacted that blows or wounds given voluntarily, and unintentionally causing death, shall be punished by from five to twenty years' *travaux forcés*, and that, if there is premeditation or waylaying, the punishment shall be *travaux forcés* for life. A schoolboy lies in wait for another to give him a thrashing. The other has a delicate chest, breaks a bloodvessel, and dies. This is within the definition; but what can be said of the punishment? In England, the offence would be manslaughter, and the boy might no doubt be transported for life, but he might also be fined a shilling.

The English system, however, involves one great disadvantage. There is no uniform standard of punishment, and thus the penalties of crimes differ according to the private judgments of all the judges and all the chairmen of quarter sessions, and so many circumstances weigh with them that the differences are at times almost incredible. I have heard two different boys sentenced for almost identically the same offence (stealing from the person), to six months' hard labour, and to six years' penal servitude. I have also heard a woman sentenced to fourteen years' transportation, and a man to four months' imprisonment, for passing forged notes—on the same circuit, but by different judges. A late judge of great eminence adopted a theory, not long before his death, that punishments for first offences ought to be severe. His brother judge did not share it, and the consequence was, that at half the towns on the Midland Circuit, imprisonments ran from eight to eighteen months, whilst at the others they were more often

four, six, or eight. It may not be very easy to say whether a servant who drinks his master's wine should go to prison for four months or for eight, but it is rather odd that the question should turn upon his being tried at Nottingham or Derby.

It may be interesting to notice, in conclusion, the comparative frequency of some of the graver crimes in the two countries. There were, in France, 107 persons accused of political crimes. In England, there were none. In France, there were 111 persons tried for *meurtre* (which would include many of the worst cases of manslaughter), 249 for assassination, 18 for parricide, 202 for infanticide, and 46 (of whom 21 were women) for poisoning. These numbers include attempts. In all, 614 persons were accused of wilfully destroying, or attempting to destroy, life. Besides these, 90 persons were charged with one form of what we most confusedly call manslaughter—viz., causing death unintentionally by blows or wounds; and 326 were tried for causing death by negligence. The negligence in 81 cases consisted in furious driving. In England, 57 persons were accused of murder, 39 of attempts to murder. Only 11 were capitally convicted on the first charge, and 10 on the second; and 264 persons were tried for manslaughter. In crimes of violence not attended with fatal consequences, the proportions are very different. In France, there were 132 cases of wounding, which disabled the wounded person for twenty days or more; in England, there were 299 cases of shooting, stabbing, and wounding with intent to do grievous bodily harm. In France, there were 773 cases of rape and assault with intent; in England, 234. In France, the persons so assaulted were, in no less than 594 cases, under fifteen years of age. In France, there were 86 trials for procuring abortion; in England, only 5. On the other hand, there were but 8 cases of bigamy in France, against 86 in England. The cases of perjury, and subornation of perjury, were 144 in each country. These last results may probably be attributed, to a great extent, to the foolish lenity shown to these crimes in England. Four years' penal servitude is the greatest punishment which can be awarded to an offence which may be made the instrument of the most atrocious murder, or to one which, though often venial, occasionally combines the grossest cruelty with the most disgraceful treachery, and has been fairly described as a rape by fraud.

Crimes against property are so differently defined in the two countries, that it would be very difficult to compare their frequency with any approach to accuracy.

J. S.

AGRICULTURE IN BRITAIN AT THE PRESENT DAY.

IT may by some at first sight be doubted whether, among the subjects fit to be treated of in a 'Cambridge Essay,' that of which the title is prefixed ought to hold a place. It may with some be the fashion to depreciate the plodding character of the tiller of the soil, and to turn with aversion from him whose talk is of bullocks. But, apart from the consideration that no subject which engages the thoughts and aims of millions of our countrymen can or ought to be uninteresting to the intellectual circle, very slight reflection will show that the subject we have chosen affords scope for the highest doctrines and speculations of political economy, and that its connexion with many of the most abstruse sciences which now are justly recognised in the cycle of University teaching, ought not to be entirely disregarded by those to whom the community ever will look up in some degree as their teachers and guides. It is not, indeed, to be expected that the scientific Fellow of a College will in many cases instruct an agricultural population, among whom his lot may at some period of life be cast, in the theory of *maxima* and *minima*, as applied to the size and intervals of cabbages or mangel-würzel, or turn his chemical knowledge to the least expensive feeding of a horse or bullock. It were, therefore, futile to attempt in these pages to invade the peculiar province of the Royal Agricultural Society in their publications, or to discuss in detail the economic advantages of Mr. Mechi's system, or Mr. Huxtable's theory as to raising turnips from a deal board, or the 'cheap and nasty' feeding of swine.

To connect this subject with the habits of thinking in this 'seat of learning and sound education,' nearly all statistical details ought as much as possible in these pages to be avoided, and only those general principles touched upon which may be deemed most suited to the contemplation of the man of science

or the political philosopher. And yet some excuse might be pleaded for another course. Who will deny the classic doctrine, '*Agriculturâ nihil melius?*' or who, though for many a long day he has not perused the refreshing poetry of a Virgil or the rural aspirations of a Horace, would throw aside as altogether misplaced some allusion to the pleasures of other scenes from which even men of science will not, through the whole period of their life, entirely hold aloof? If we presume to offer advice to the *quondam* Fellow, *elevated* we may say, though some may think depressed, to the position of a country rector, we would say, it is not altogether unworthy of his high and holy office sometimes to relax and take a pleasure—provided he does not allow the pursuit, either as a means of gain or amusement, to become too engrossing—in watching the luxuriance of a smiling field, the produce all his own; or look on nature, and from that to higher contemplations, in witnessing the gambols and contentment of a well-cared-for assortment of live stock around his dwelling. It may not altogether hurt his usefulness, or prevent his gaining access to the hearts of his flock, in some districts at least, if he can show from practical knowledge an interest in their crops and herds, and, while he leads his parishioners to rejoice in the bounty of the Giver of all increase, be able to commend something in the exertions of their daily skill and toil.

But little need be said to commend this subject, in some, at least, of its aspects, to the profound man of science or him who studies what is perhaps the highest practical art—that of government. The final end and object of agriculture—to attempt a logical definition—is of course primarily to supply the necessary food for the support of man, whether such consist in those cereal and vegetable products consumed by him, either after undergoing a merely simple culinary process or subjected to what deserves the name of manufacture, or in the grass and other crops consumed by those animals which afford the staple of the other branch of his ordinary diet. A secondary and derivative object, not likely, in new countries at least, to come into extended operation till the first has been in some measure adequately attained, is to supply those products of drink—as the barley for malt in this country, the vine in France and elsewhere—which become a sort of secondary necessary; and, after these objects are satisfied, the soil may be devoted to such crops as flax or hemp, or, in part of the Continent, the colza, for oil, which supply or may assist some of our important manufactures. Arboriculture may here be put out of the question, as it is hardly ever treated as a branch of agriculture; and though we think it one which, from the extension of

railways, the vast annual consumption of wood in coal mines and many other ways, will soon attain greatly increased importance in itself, and, connected with the theory of shelter to arable and pasture lands, cannot entirely be overlooked, the subject is wide enough without here touching on that head. It is impossible entirely to separate from each other what we have styled the primary and secondary objects of agriculture. In raising meat for human food, there are parts of the animal of course suited to various other objects; and though now in England the sheep is valuable chiefly for its product of meat, yet the growth of wool in that case can scarcely be said to be entirely secondary. Again, in the more varied and luxuriant products of other climes, the supply of luxuries holds a greater place in agriculture than in our fatherland. Perhaps in France the large space of ground taken up in vines, in colza, and other crops, may draw off the attention of the cultivator, and be one cause why its product in money and in food value, according to the extent of territory, is below our own. At all events, in glancing over modern agriculture, so far as regards this country, we may almost confine our attention to a few of its great products adapted directly to sustain human life, such as corn, and meat, and dairy produce—wool, the fourth great agricultural product, being considered as accessory and incidental more than primary.

The problem, then, to be solved, is how to sustain the greatest amount of life in comfortable circumstances, and hence, of course, how to produce the greatest amount with the least capital and toil. And here we may observe that the very constitution of our nature and the Divine economy prescribe certain rules which it is folly to expect will ever be superseded. 'Except a man labour neither shall he eat,' is an injunction which we hold conclusive against a *royal road*, as it may be termed, to perfection in agriculture, just as it is impossible in learning. We are aware to what extremes this axiom might be pushed. Applied to learning, it might be said, 'Why employ the aid of logarithms, of a calculating machine, or the differential calculus to shorten toil; and shall agriculture expect no wonderful advantage from steam power, from chemical manuring of the soil, or from other such like expedients?' The answer to this, however, is most easy. Doubtless it is true that toil is necessary to existence, and the need of food requires unremitting activity and exertion. It is a part of the penalty of the Fall that the Creator of the universe, in this as in other arts, '*haud facilem esse viam voluit.*' But in order not to leave exertion unrewarded, not to quench rising civilization, or prevent one age from making progress beyond former

periods, not only are the greatest successes open to scientific invention, or what may be termed as nearly equivalent—the saving of toil or employment, and accumulation of capital—but the labour and toil, whether mental or manual, of past generations, affords a reserve and starting-point to their successors to begin from. And as the age of the world rolls on—as the struggle for wealth, or comfort, or even subsistence, becomes more earnest in agriculture as in every other art, the thoughtful and the skilful reap the most abundant harvest. The land must be tilled, not only with physical labour, but also with intellect. The relations of other sciences—chemistry, mechanics, and geology—become more closely connected with it, and in this, as well as in other arts, the economical law is shown forth, that the most unskilled labourer is he who will be left behind in the race, to obtain with difficulty a bare subsistence. When Arkwright's machine superseded the hand-loom weavers, this law was illustrated. Again, the Spitalfields manufacturers were doomed to misery because they had nothing to rely on but the lowest kind of unskilled occupation. Those trades are the most unfortunate—and they are to be avoided by fathers in bringing up their children—in which least scope is afforded for improvement, or for the hopeful exertion of those faculties of the mind with which the Creator has endowed us, and which it is undoubtedly His intention should meet with the fullest development.

Happily, we believe that agriculture is not one of those; for, though many of its operations are such as can be performed by the merest clodhopper that would substitute '*his mark*' for the signing of his name, yet it is no secondary object of this article to show that agriculture is capable of rewarding intellectual exertions, of deriving the greatest aid from scientific inquiry and mechanical ingenuity, and that it is from hopes of advancement from the application of such that we derive the greatest encouragement in thinking that our national agriculture will still go on and prosper, and maintain its own and England's pre-eminence in this most important branch of industry and source of wealth over other nations of the world.

And here we may, in a sentence or two, advert to a question which is sometimes agitated. Such an idea would have appeared strange to our forefathers, but we cannot see why a distinction must of necessity be drawn between agriculture and what are more generally styled manufactures. No doubt, so far a distinction exists, that the ground which we or our progenitors found ready to our hand forms the subject on which we operate, and that the plants we rear derive their nurture

from the air and from the dews of heaven, which human handicraft cannot control; but still the principles which infer success in manufacturing industry are in many respects equally applicable to the art of raising food. The laws of capital, of rent and wages, of labour and profit, apply equally; the principle of division of labour, though not seen so easily, is not found to fail when tested in this science, and the only difference appears to be that the induction of facts on which to ground our inferences is wider, and the profits perhaps from year to year more uncertain than can be said of many other occupations. We agree to a great extent with the dictum of Burke: 'I have been a farmer for twenty-seven years, and it is a trade the most precarious in its advantages, the most liable to losses, and the least profitable of any that is carried on. It requires ten times more of labour, of vigilance, of attention, of skill, and, let me add, of good fortune, also, to carry on the business with success, than what belongs to any other trade.'

But after making allowance for all these and what more might be urged, we believe much might be advanced in favour of considering agriculture as under the same category and subject to the same rules as many others of our ordinary manufactures. We do not like to see an opposition proclaimed between it and other mechanical arts; circumstances have happily of late to a great extent dispelled the jealousy between the agriculturist and the manufacturer, and we think this view, that the principles of each are much the same, calculated to foster that spirit of mutual goodwill which ought to exist between what were once erroneously thought rival and opposing interests. Hence we admire the spirit of a motto current at the late Salisbury meeting, 'Success to Agriculture—Trade and Commerce—Speed the Plough,' as joining interests that never ought to be separated. It is not for the one class or the other, either the proprietor or occupying farmer on the one hand, or the trader or capitalist of Manchester on the other, to consider the employment of his neighbour either as opposed to his own or in itself degrading—as the Greeks would have said, *βάνανσος*. We believe a great step will be gained when the landowner shall have learned to watch with more interest even than now, and to copy with more attention, the precision and accuracy of those rules of conducting business without the closest attention to which the shopkeeper or manufacturer would speedily find himself in the *Gazette*.

And in saying this we know what a change has of late years come over the spirit of the dream. Railroads and steam, the spread of intelligence, the Exhibition of 1851, and count-

less other strides in civilization, have made the farmer of 1857 a different being from him of even 1838; and the day has long gone by since the subject of science was scouted in most of our agricultural periodicals. But we are anticipating the subject we propose here to treat of.

There are three objects to which we would direct our observations, as suggested by the subject of modern agriculture:—

First. To give a sketch of our agricultural progress, and especially, for reasons which may very shortly be made apparent, for the last hundred years, in our island.

Secondly. To compare our state with that of other modern nations, and France especially, as the country both most adjacent to our own, and also, next to us, the most advanced; and to illustrate the causes of our own superiority.

Thirdly. To consider how far such comparative superiority is likely to be maintained, and the directions in which we should look, and the aids we ought to hope for in our expectations of still farther progress.

I. It were easy to sketch the progress of agriculture all over the world from the earliest times to the present day. Mankind at first were shepherds, as soon as the savage life of a hunter began to be of less necessity and repute. Sacred writ in these times makes mention of the flocks and herds which roamed over the plains of Mesopotamia and Palestine, when the latter country is first mentioned. It is in later times that we hear of it 'flowing with milk and honey,' and all those products of grain &c. which mark more advancing civilization. The Carthaginians, among others, seem early to have left treatises upon the subject, translated by a decree of the Roman Senate, and the foundation of the works of Varro. Shortly after came the various Roman writers, and among them not the least instructive as well as practical—Virgil—who, notwithstanding some mistakes, has furnished us with precepts applicable even up to the present time. The maxim that *a crop of flax or oats exhausts the soil*, though the third exhausting crop mentioned by him, the poppies, applies not here, will still warn the overgreedy husbandman amongst us. And still the warning was needed, and the greedy race not extinct fifteen hundred years or more after his time, when Tusser, in his *Five Hundred Points*, repeated it:—

> Still crop upon crop many farmers do take,
> And reap little profit for greediness' sake.

Columella and Pliny have left much instruction; and a maxim of the latter, *Latifundia perdidêre Italiam*, is still the subject

for discussion with political economists, as to the effects of large and small farms respectively. But it must be remembered as an element of this discussion that the Romans, like the ancient Chaldeans and Syrians, cultivated by slaves; and however a valuable crop, like tobacco in Virginia, or for some time sugar in the West Indies or elsewhere, might repay such expensive cultivation, we see one reason why Italy was ruined in the very fact of the waste occasioned by this most ruinous expenditure of power. The Romans found corn unprofitable by slave labour—they had recourse to pasture—a double evil was incurred; they were dependent on the precarious events of winds and waves for daily food, and at the same time the decay of the peasant population, the ancient *Marsi pubesque Sabella*, left them at the mercy of a hired soldiery, and the stalwart might and resistless sinew of the northern Goths.

Perhaps a similar cause to that of slave labour for many centuries retarded the progress of Europe and England. The Germans, who overran the greater part of Europe, are described by Horace and Cæsar as roaming over unmeasured acres, without steadiness or patience to take even more than one fugitive crop on the same land. So long as this state of things existed, no settled cultivation or improvement of course could occur; and though the feudal system was in some degree a bond of society for national defence, the uncertainty of the tenure of land, the exclusively military character of the system generally, and the oppression in which the lower peasants were kept (it existed longer in the Continent, it is true, than in Britain, though here we see traces of it long enduring in the name of Villeyns), were effectual bars to the progress of agricultural improvement. In Britain, the first substitution of cereal diet for *lacte et carne* was owing to the Romans, and under them we became a flourishing (for the time) and exporting country. Britain was then a habitat for the vine; and from its decay some have drawn the inference, we believe erroneously, that our climate has deteriorated. We do not doubt that in the warm vales, such as those of the Severn, the best part of 'Nature's noble garden,' it would still be possible to rear that more congenial product of southern climes. The true theory is, that as the sugar-cane was once cultivated in Spain and elsewhere, but has since emigrated, so a similar change has occurred to the vine. After the wars of the Roses, agriculture began to make some progress. By this time the Midland counties had become enclosed, and taken some shape and form to the agricultural eye. The settlement amongst us of the Flemings had given an impulse to what is still one of our four chief products, the growth of wool. What

the cattle were in those early times there are some means of ascertaining. A little salt beef was the only provender, for several of the winter months, of a nobleman's household; and probably the rushes which strewed the floor were the best support of the aged bullocks, which might improve on the summer pastures, but had difficulty in the months of winter to keep skin and bone together. As great a contrast would be seen between such and a modern two-year-old Durham steer as if we could place at present a modern substantial Lincolnshire yeoman beside the fen man of Queen Elizabeth's time, who farmed, or fished, or fowled for a precarious livelihood, and, half-amphibious, waded through the unwholesome sloughs of despond on stilts.

Let praise, where due, be awarded to the monks, for to them certainly we owe much of agricultural improvement. They first started the drainage of the fens, which it needs only to mention to the inhabitant of Cambridgeshire, of Lincolnshire, and other adjoining counties, for him at once to appreciate.

The works of Tusser, of Jethro Tull†, and Fitzherbert, appearing in the middle of the sixteenth century, reduced to system a few plain precepts, though some of them but little accord with modern notions. Tusser's moral sentiments of 'good husbandry housewife,' and his eschewing of *raskabilia*—a race, we fear, amongst hired servants still existing—are precepts of wisdom never to be forgotten. Fitzherbert's works are probably less known to the public in general than those of Tull and Tusser, but they are understood to have been of great benefit to English farmers, and his description and correct ideas of the plough and other implements show perhaps more science than could naturally be expected at so early a period.

Shortly after this, perhaps, little can be remarked, except that about the year 1600 (1607 is the correct date of the passing of the first bill) began the draining of 6000 acres of fen-land in the Midland district, attention being turned to the now rich but then savage and desolate country, of which 350,000 acres are divided between Cambridge and Lincoln alone. Under the Commonwealth, several men, who deserve to be known better than they generally are, wrote practically on various branches of husbandry, and many of the less usual crops. Blythe, in his *Improver Improved*, in 1652, treated largely, among other subjects, of draining fen-land and regaining land from the sea, and was too enlightened to fall in with what was the common popular notion at many periods in England, that large enclosures tended to prevent labour, and to be hurt-

† 1731.

ful to wages. He wrote on clover and sain foin, then lately introduced, and wild woad, and madder, and saffron, and liquorice (now chiefly interesting, we believe, to one district in the West Riding of Yorkshire), rape, and cole-seed, and others, what we should now term speculative crops. Cromwell took some pains in introducing Flemish husbandry into Hertfordshire. With William III. came in the good Dutch root, the turnip, destined long to be tortured with unscientific treatment, that is, broadcast or otherwise, though the very pivot, for the last fifty or sixty years at least, of all improvement in scientific or high farming. Till clover and the turnip came in, agriculture in Britain can scarcely be said to have left its infancy. These introduced ameliorating crops; they abridged the summer fallow, and gave rise to a new era in affording means for a regular supply of fat meat throughout the year, to obtain which, except by the comparatively expensive corn and hay, no means could before exist. Jethro Tull was acquainted with and promoted the drill system; but few will now support his supposed plausible theories, of enabling repeated grain crops to be grown without exhausting the soil, though the utility of his system for leguminous or root crops is the essential foundation of all improvement in high farming.

Agriculture, after the time of Claudius, had languished in Italy till nearly 1500, and it was not till after the Peace of Aix-la-Chapelle that the other nations of Europe found leisure to turn their attention to this surest source of national wealth. But the limits of this article prevent anything like even the most cursory notice of the history of agriculture in foreign countries.

We have now come down to a period in Britain when capital and security were to be the handmaids of agriculture, and rapidly to develope our national resources. After the House of Hanover was firmly fixed on the throne, agriculture, commerce, and manufactures began rapidly to develope themselves, though impeded by the disastrous period of the American war. Yet about a century ago, and again towards 1790, Britain was even an exporting country; but the manufacturing spirit had not yet appeared, which was destined to give the greatest impulse to agriculture by providing a market at home. That Britain *now* ever could succeed in supplying other nations with food is what some, even looking at Anglo-Saxon skill, and capital, and enterprise, will fairly doubt; but so long as manufactures flourish, we need not fear the want of a large enough population to afford to the agriculturist an abundant home market. It is remarkable that the seat of manufactures has placed itself often where the soil was poorest. While the

many towns in the west of Yorkshire have sprung up, and been the only means of inducing a naturally poor soil there to be cultivated to the highest pitch; and while the same may be said of Lancashire, Warwickshire, and other parts where agriculture is flourishing, because a dense people is ever ready to buy the most minute portion of produce, and there are four consumers for one that existed before; around York, on the contrary, where an infinitely superior natural soil exists, it has been remarked that no manufacture has been established—as if it was the design of Providence that each pursuit should flourish in the soil least adapted for the other.

Before 1745, in Scotland, where, considering the late period of its agricultural development, the most striking progress has confessedly taken place, scarcely any improved agriculture can be said to have existed at all. But in 1723 a society was formed, the first model of the Highland Society of 1784, which gave rise to the more modern Royal Agricultural Society of England, and which continued for more than twenty years after 1723, greatly to the public benefit. After 1745, English capital poured into the country, which, but for the unhappy civil struggles, and the continued maintenance, till that period, of the rude and antiquated system of feudal or heritable jurisdiction, might have taken place at an earlier period after the union of 1707. At other times, such as the invasion of Cromwell's soldiery, an influx of English money had taken place; but while even the Lowland districts were liable to be overrun by plundering hordes of savage Highlanders, had capital and skill been at hand, before the settlement of the kingdom there was no security for such to develope themselves. It is remarkable from this time, however, how far agricultural produce in Scotland comparatively outran that of England. Various causes may be stated for this,—such as the necessity for greater skill, owing to the inferiority of the climate; certain legislative enactments, as those for enclosing commons, which passed earlier there than in England; and the spirit of manufactures and commerce distracting the attention more of Englishmen than of Scotchmen. But we believe the principal cause to be correctly stated by Sir John Sinclair, whose correct views and energy in carrying out the Board of Agriculture, of which he was the President, conferred the greatest benefits both on his native country and on England. He thus speaks regarding the comparative progress of agricultural improvement in England and Scotland:—

It has been justly remarked that agricultural improvements began to appear at an earlier period in England than in Scotland—before the human mind had been fully ripened, and before a knowledge of

mechanics or the habits of mercantile accuracy had been brought to any degree of perfection—and rules to a certain degree advantageous having been once established, there arose a strong prejudice in their favour which it was difficult to eradicate; whereas the improvements of Scotland commenced at a more advanced and enlightened period of society, when great progress had been made in the arts and in the conduct of every species of business, and after a general spirit of inquiry, of industry, and of exertion, had been excited.

Up to this period, then, of 1750, in England, though the management of stock and grass land had reached considerable perfection, the rudiments of improvement in general farming could scarcely be said to have been laid. Long, long after merry England was divided into hedgerows, and luxuriated in produce of various kinds, especially grazing herbage, many of what are now the best agricultural counties were lying waste. As a specimen of a northern county between 1700 and 1750, we may quote from a Report of Mr. Grey of Dilston, in the Transactions of the Royal Agricultural Society. He describes much of the large county of Northumberland as wild and uncultivated, with little to attract the attention of the husbandman—covered with forests, if we may so speak, of broom and furze. This partly arose from the risk to which it had been exposed from the predatory incursions of the foraging borderers up to a late period of history. About 1750, however, in this part, men of activity and energy began to appear. The greater growth of root crops affording winter sustenance in the cheapest method, encouraged improvements in a breed of cattle which required more generous treatment, and warmth, and shelter, to repay the fostering care of the husbandman. The Culleys settled in Northumberland, and followed up the example of Bakewell of Dishley, in Leicestershire, and initiated one of the axioms of the meat producer, that well-selected breeds, early maturity, and ample feeding from the moment of birth, are the golden rules of the meat producer.

Mr. Baker of Writtle, takes credit to Essex for commencing, previous to this period, a rude sort of drainage, but of which the first principles generally made little progress in England till towards the beginning of this century, when Elkington, and after him Johnston, did much in one direction, though destined only to endure for a time, until the more correct and universally acting methods of Smith of Deanston, and the modern tile-draining so essential for heavy soils, came recently into use. Before such, there was some excuse for the bare-fallow system. In a long summer, probably a few dry weeks could be found to pulverize and break down such soils, in order

to fit them for succeeding crops. Now that these are ameliorated, though exertion is required to secure the proper culture for the root crops in a more limited space of time, the necessary labour is performed with less effort of the working cattle, and the profit of an additional crop is obtained with greater ease than when the land lay naked previously for an entire season.

It has been remarked that England has a compensation for the inferiority of her climate in the fact, that during nearly every season of the year the husbandman can pursue his occupation free, on the one hand, from the overpowering heats of the south, or the severity of the winter of more northern regions. The drying of the soil is rapidly affording the same facility for pursuing agricultural operations with the working cattle; and at what is comparatively the dead season, the cooking system of food for cattle prevents even a day about the homestead of entire idleness. Thus, while a more moderate blaze of summer heat renders less applicable here the Virgilian precept of '*nudus ara*,' we have to felicitate ourselves that a frozen climate and want of occupation does not bear out in our country his other maxim, '*Hyems ignava colono*.'

But for the fact that our connexion with America first diverted the attention of the people to colonization there rather than to the development of manufacturing and agricultural interests at home, and but for the long struggle and depression at the close of the contest, it is probable the stride taken in agriculture from sixty to eighty years ago might have been a little earlier. As it was, England then maintained her superiority to France, which we flatter ourselves she will long continue to hold. 'England,' in the words of Léonce de Lavergne (from whom in the sequel we shall have frequently to quote,) 'became, a hundred years after the Stuarts, the granary of Europe. Though she had to feed twice the amount of her own population, and that population living much better than before, she sold annually to foreigners 500,000 to 1,000,000 quarters of corn, which is enormous, considering the means of transport of that period. During the last period of the nineteenth century, she sold to her neighbours, and especially to France, forty million pounds' worth of cereals.'

We cannot express, in more appropriate terms than those used by the same author, the commencement of the revolution in agriculture to which we have now to allude:—

The decisive step was taken sixty or eighty years ago. At the time when France was occupied with the sanguinary struggles of her political revolution, a less noisy and more salutary revolution was being accomplished in English agriculture. Another man of

genius, Arthur Young, completed what had been begun by Bakewell. While the one showed how the most was to be made out of cattle, the other taught how the largest possible number of them could be fed upon a given extent of land.

Adam Smith, the great political economist, was teaching how markets and commercial prosperity were necessary for the interests of the husbandman, and Arthur Young followed practically in his wake. A native of the county of Suffolk, he succeeded better in inspiring others with a spirit of improvement than in benefiting himself, as he is said not to have succeeded well as a practical farmer. But before the Earl of Leicester, then Coke of Holkham, succeeded to his patrimony, Arthur Young had been casting abroad his intelligent observations, and the diffusion of these ideas had prepared extensive proprietors to put them into successful practice. It is difficult to conceive how the new system could have grown, and flourished, and been practically—that is, pecuniarily—successful, as it has, but for the inventions of Watt and Arkwright giving an enormous impulse concurrently to other branches of industrial employment, and the progress of the manufacturing system raising up a gradually multiplied population to consume the fruits of improved agricultural skill and energy. When the breed of sheep and cattle had been improved, the means were found, by the extension of the growth of root-crops, to make such of the highest utility; and, again, the necessary consumers by degrees appeared, without which advantage the stimulus to extend and still further improve might have been wanting.

Those who wish to study the old rotations which existed throughout the country, will see in many books on the subject the variety of forms in which 'crop after crop,' with or without the intervention of a summer fallow, before 1776, was generally taken throughout the country. In Scotland, the system was certainly carried to its highest possible development; the land was generally divided into infield and outfield, the infield undergoing a sort of rotation, of getting as much manure as a certain number of stocking kept half-starved on the outfield could provide, and oats and barley some seven or eight times, perhaps, grown in succession, till the very weeds overpowered the cereal crop, and necessitated an attempt to get rid of them, and restore, as was supposed, the fertility of the soil, constantly under this process deteriorating, till the same unscientific treatment could be repeated. It is recorded how teams of oxen, perhaps eight or ten, used to make way with difficulty among the matted mass of weeds engendered by the previous maltreatment of years; and the summer was passed in an

attempt to bring a few acres, compared to the whole extent, into a decent state of tilth and cleanliness.

Mr. Coke, who succeeded to the now princely estate of Holkham in 1776, was induced, perhaps by a tenant refusing to rent at five shillings an acre a large part of what is now the best land, to set to work on it himself. The boast of Augustus with regard to Rome, '*Lateritiam inveni: marmoream reliqui,*' is well known in history. Mr. Coke converted Norfolk from a rye-and-rabbit-producing waste to the noble wheat and sheep producing country which it now is. Around Holkham, at his succession, the system was, three crops without intervention, then broadcast turnips, and the whole unenclosed. It was, probably, at first a great innovation—and an ancient farmer might suppose that, from sacrificing a grain crop, the thing would never pay—to take only two wheat crops in succession, and then two years of pasture. But it was soon found that even two wheat crops were inconsistent with profitable farming; and though Mr. Coke found a difficulty in suppressing this practice, he soon arrived at what is known as the famous Norfolk four-course system — one-fourth roots, one-fourth barley and oats, a third fourth grass, and the remaining fourth wheat. The difficulty of growing wheat on these light lands was overcome by keeping on purchased food a greater quantity of stock than the produce of the soil itself would support. The breed of all kinds of animals was here improved on the principles laid down by Bakewell, and liberal covenants secured to the farmer some remuneration from a successor, when a change took place, for improvements not exhausted in the previous tenancy. In general, that system has been so far modified as to introduce a second grass crop, making the rotation extend over five years instead of four. When the soil is too heavy, beans may be grown instead of root-crops; and the effect of this modification, when the soil is most suited to it, is not materially to reduce the quantity of stock that may be kept, the produce of grass being increased to make up the deficiency between one-fourth and one-fifth of roots. Amid all other agricultural improvements, it is unlikely, for a long time, that this system will be materially changed. It has proved the only means by which a large extent of light lands could be cultivated at all. And it is now the complaint, when heavy and undrained lands are met with, that the difficulty of raising on them a turnip crop for the winter food of cattle is the greatest deduction from the profit of their working.

The Eastern counties, as Essex, Norfolk, and Suffolk, Lincoln, York, Northumberland, and the Lothians, together with the

counties nearest adjoining to them, afford the best illustrations of improved high farming, and are in general more to be looked to than the Midland and Western counties, by those who wish to comprehend the rules and principles of mixed arable cultivation. The neighbouring counties of Bedford, Cambridge, and Huntingdon, and part of Lincolnshire, afford an illustration of a totally different nature, and have been ameliorated by other means than those just described. Part of Lincolnshire retains the name of Holland, from its peculiarly low and marshy character. Between Cambridge and Lincoln we have estimated 350,000 acres; probably the whole fens formed by the rivers Ouse, Nen, Cam, and others, do not comprehend much less than 1,000,000 of acres. Following up the example of the monks, the family of Bedford distinguished itself from the first by attempts to reclaim these vast and pestilential wastes. A concession of 100,000 acres was granted to a company as early as the beginning of the seventeenth century, for carrying on the necessary works of arterial drainage. Windmills soon took the place to some extent of horse-engines, for pumping off the superfluous moisture. 1832 is recorded as the first year of the introduction of that more economical agent, steam, which was to supersede in a great measure the old-established methods. With regard to steam draining in the Lynn district, we observe it recorded that a sixty-horse-power engine, at a cost of 4000*l.* for engine and house, is employed in the drainage of about 8000 acres. From the strength and fertility of the virgin soil here, when drained, different crops of wheat and oats may often be grown in succession. It is a peculiarity of these soils, that after they are first reclaimed it is some time before the model five-shift course can be adopted. There are probably few parts of the country in which a greater rise of value in property can be cited as an example of our increasing agricultural wealth than all around Cambridgeshire, towards Ely, Huntingdon, and other parts of the large district we have already alluded to. As a necessary and natural consequence, the health of the inhabitants is greatly benefited. Ague, long a bane of the seat of our University, is now mostly banished. No one could now imagine that the inhabitants retained, even considerably after the time of Elizabeth, the semi-amphibious features above alluded to.

To other modes of improvement, that of gaining land from the sea by warping, in Lincolnshire and elsewhere, has lately been added, and ere long may add unknown millions to the agricultural capital of the country. A hundred years ago, near Lincoln, a tower or lighthouse was required to guide travellers through the waste and dreary moor. 'Lincoln Heath,' says

Arthur Young, 'was in 1780 a track of desolation for seventy miles. Within twenty years it was all enclosed, and became a pattern of high farming.' Previously he was much disgusted at seeing what was calculated to supply food for man, lying waste in useless rabbit warrens. He lived to see, instead of them, thousands of acres of turnips flourish. 'In this county, perhaps,' as Mr. Pusey says in a Report to the Agricultural Society, 'there are turnip fields, for extent and luxuriance, to be seen second to none in the kingdom.' We quote the authority of Léonce de Lavergne for the fact, that the property of Lord Yarborough in that part now amounts to some 30,000 acres, yielding 30,000*l.* per annum—a century ago, probably not one-tenth of that value.

In the vast extent of Yorkshire, all varieties of soil and styles of farming are exhibited. The West Riding is one of the best illustrations of the advantages to the agriculturist of a ready market. About the manufacturing towns, dairy and small farms, much grass, and diversified rotations prevail; it is in such situations only that so small subdivisions as twenty acres or less can be profitable. They do not here, as in some unimproved districts—as in the north of Scotland or elsewhere—show that poverty of capital which alone renders such necessary, in consequence of general inability to stock and manage larger ones. One of the new improvements, if we may so speak of an invention likely to remain for some time unperfected, and to which we shall hereafter advert—namely, the application of town sewage to irrigation—seems particularly adapted to the situation and character of the towns of this district. The improvement of this part of the country is owing more to the increase of population and ready markets than those purely agricultural improvements which we have generally to notice elsewhere. Of the land around York, Arthur Young speaks in the highest terms of praise, contrasting with its good qualities the inertness and shameful tillage of man; but before the close of his surveys, he might here, as in Lincolnshire, have noticed most material progress. Though still the railway traveller is struck by some high, and often crooked, ridges of undrained land, yet from year to year, as elsewhere, amelioration is going on. Even in the high and once waste Yorkshire moors, a breed of sheep suited to them was improved, and the same superiority which Durham claims for its short-horns was attained, and is still carried on, in Yorkshire by its Cleveland race of horses.

As the French author says, 'For an agricultural tour in England go north—visit Northumberland, and if possible go to Scotland.' We have already alluded to the commencement of improvement in Northumberland before 1750, availing our-

selves of Mr. Grey of Dilston's Report in the Journal of the Royal Agricultural Society. He records, about 1770, the first growth of drilled turnips, following the example of an agriculturist across the border; and those who are curious in statistics of rent, may consult his Essay for notes of the vast rise since 1800, especially on the land belonging to Earl Grey and the Greenwich Hospital estates.

Before we notice shortly the agriculture of the Lothians and the East coasts of Scotland, we must glance at the clay and chalk districts of England. The drawbacks to improvement of soils such as Essex or the London clay, arise from the tenacity of the land, never to be brought into a fit state for root crops, without thorough draining, and deep ploughing, and pulverising. In Essex still, as ever, the greatest quantity of that unagricultural crop, summer fallow, prevails; though here, of course, it is yearly diminishing. Essex had early the merit of good roads, and, sensible of its wants, had long ago begun to drain, but to little purpose before the modern institution of thorough, or the nearly synonymous term, of furrow draining. The pivot of improvement of the southern and chalk districts is, as elsewhere, the five-course, or a similar rotation, where turnip is apt to fail from drought, mangel-würzel being a common and equally efficient substitute, and barley and sheep farming for which the light downs are peculiarly adapted, in the place of wheat and larger animals. What Bakewell was to the Dishley breed, Ellman was in the south, about the close of the last century, to the South Down; in each case, from good breeding and early maturity, the increased profits of the rearer being estimated, at the least, twenty per cent.

Of the Western and Midland counties, we say but little. Greater moisture of climate renders them more adapted for grazing, though the profits of the root crop system daily make the calculation, whether arable or grass land farming is more profitable, to be left in greater doubt. A superfluity of hedge timber enclosures seems to be a drawback in many of these counties, Devon especially; and except Staffordshire and Warwickshire, the want of a non-agricultural consuming population tends to prevent the progress of cereal cultivation. For this, however, some places, as Somersetshire, possess peculiar advantages. It is no uncommon thing there to grow a root crop in the same season where a wheat crop has just been reaped. From superiority of climate, and small extent comparatively of tenacious soil, as may be supposed, there are few bare fallows, and a popular saying expresses their peculiar advantages:

Stubble turnips, fed off in March;
Spring vetches, fed in June;
Turnips, fed in December;
And the land sown to wheat again.

In no part of Britain is better farming to be seen, or higher rents or profits of farms gained, than in the Lothians. Five pounds an acre is no uncommon rent, which leaves a large margin for the circumstance that in Scotland most of the burdens defrayed by the tenant in the south fall here upon the proprietor. M. de Lavergne is somewhat in error in supposing that these are greatly lighter than in England. We have already stated that the turnip cultivation in the best way was imported from Roxburghshire across the border. In the Lothians, of course, as well as the more northern counties of the East coast, it is the crop which demands the greatest skill and attention of the farmer. It is not so very long—not above one hundred years—since even the now antiquated bare fallow system was a vast improvement on the more barbarous outfield and infield. That, however, in its turn, did not long subsist in Scotland. The intimate union of the two countries, even long before the introduction of railways, and spread of manufacturing industry to the south of Scotland, opened up a market for surplus produce. About eighty years ago, Glasgow, with a population of 30,000, did not maintain a regular butcher market. The import into England of cattle from Scotland will be noticed when we speak of more recent progress, as hitherto. we have endeavoured to confine our attention to the progress between 1750 and the end of the century. Here we only notice, as first taking their rise in Scotland some sixty years ago, the reaping machine of Bell, which now even can hardly be said to be entirely perfected, and the threshing machine in use in the south of Scotland before it came to England, an invention soon developed into general use, and the last improvement on which is not so much a change in its principle as the application of a different motive power.

Within a few years of the close of the century, was instituted the Board of Agriculture—Arthur Young its secretary. The Highland Society arose in 1784, but its essays were not published for some fifteen years after. Had Arthur Young seen the operation of it and others, he would probably have changed his mind, or at least excepted them from the class of which he speaks in an incidental observation as to a French Society, in his tour through that kingdom. He speaks of such societies meeting, conversing, offering premiums, and talking nonsense, and even thinks it so far a bliss of ignorance that Frenchmen,

not being able generally to read, escaped the harm of their publications.

In collecting into a focus the scattered opinions of farmers throughout the country, and in the surveys of different parts, such as were published by Young, Kent, Marshall, and others, this institution, aided by the strong sense of Sir John Sinclair, its president, did incalculable service. Farmers throughout the country were made sensible of the defects of their own districts; and for the next fifteen years after the commencement of the century, the carrying out universally the principles of improvement we have alluded to were tested indisputably by experience in all quarters of the kingdom, and the spread of these was more, at that time, the characteristic of agriculture than any new application or improved mode of farming. In all branches, however, some considerable progress was made, and with the advance of knowledge, the 'culture of the mind' which must necessarily 'precede that of the land' commenced. 'The daily occupation of the practical farmer,' it has been said, 'is in no ways favourable to scientific research and intellectual attainments;' but still, at that period the information spread abroad by various societies had no small effect in inciting what it only required good prices and a ready market generally to diffuse. During the fifteen years of the French war, more Enclosure Bills were passed in Parliament than at any other period; the population increased; and neither the manufacturing nor agricultural wealth was prevented from steady increase by the severity of the warlike struggle. Besides the greater development of those principles of farming, we have to note an attempt made, and by no means unsuccessfully so far as it went, by what was called the deep drainage system, to supply the desideratum of enabling a turnip crop—the chief point to be aimed at—to succeed in soils where superabundant moisture prevailed. Elkington previously, and Johnston in the beginning of the century, did much good by carrying off ground-springs by deep drains, and enabling much of the most apparently wet land to be brought into cultivation. But it was not till some twenty or twenty-five years ago that something more than this was found necessary, and the doctrine, of which Smith of Deanston was the prime mover, became by degrees admitted, that even without ground-springs, a series of drains from eighteen to thirty feet apart, according to the tenacity of the soil, was required to bring to the most profitable state for farming all our heavy and tenacious clay soils, and a large portion of our whole cultivated lands. After the cessation of the French war, owing to the decline of prices and commercial difficulties

that prevailed, the rate of progress made from 1800 to 1815 could not be said to be maintained; nevertheless, advances still went on. The population, in process of nearly doubling between 1801 and 1841, required more food, and efforts were making to meet these requirements. In 1823, Mr. Chaplin enclosed an immense tract of land near Sleaford, completing most of what required to be done in the vast district of Lincolnshire we have before described. Drainage went on in the fen district, aided by the now new agent of steam power, as there applied; the date we before mentioned, 1832. A tract near Ely is recorded as purchased for 40*l.* in 1800, and let in 1832 for 400*l.* yearly—since increased to 1600*l.*, or 2*l.* an acre.

The opening of the first railroad in England may well be termed an era in agriculture, as well as of other industry in Britain. Without this cheap mode of conveyance, millions of agricultural capital expended in improvements would have had no return. Essential as a railroad is to an inland district, it is of no small consequence even to those districts which could avail themselves of conveyance by sea to the great emporium of meat and other produce, the London market. By steam-boat communication, the Lothians and more northern counties of the East coast of Scotland were able to avail themselves of the necessary rapid transit; but the recent extension of rail-roads to this district has not only, by competition, cheapened the cost, but also enabled, to a great extent, the meat to be sent up instead of the more bulky conveyance of the live animal, costly not only in itself, but as a certain amount of deterioration takes place even in the quickest transit. We do not think we exaggerate in stating the value of animals, dead or living, sent up yearly from Aberdeen to London, as verging towards half-a-million, a sum about equivalent to the rental of the district which supplies them; and as a stimulus is given to the interior of that great turnip county, and facilities given by bringing the London market home to the dwellings of the farmer among the Scottish hills, the cry will still be, more and more, 'they come.'

1838 first witnessed the rise of the Royal Agricultural Society of England. Future periods will point to this as an era in the history of agriculture. In the adoption of its motto—'Science with Practice'—proof was given that the farmer of 1838 was no longer that of 1800; just as it may be said—from the rapid communication of thought by railroads, the spread of agricultural information from the press, and the thorough inoculation going on of scientific principles—that the farmer of 1857 is different from him of 1838. We may

date this period as the rise, not only of thorough draining and high-farming principles, but also as that of intelligent farming, in which the aid of mechanical skill and of scientific attainments began to be viewed, at first with doubting wonder, and then eagerly adopted into practice. That they have not made more progress is, perhaps, not the fault entirely of the agriculturists. The *savans* must also take their share of the blame; but any one who looks back even at the first number of the *Transactions of the Royal Society*, and compares the present ones, will see the much larger share which is given now to scientific considerations. One reason why earlier progress was not made was, that, as is generally the result in new applications of science, no nomenclature universally recognised was adopted. To this day it is difficult to define even one of the different kinds of soil so as to convey the same meaning exactly to the minds of all farmers—and the combined 'science with practice' is awanting. The *savant* either taught without himself knowing the practice of the farmer, or the farmer went on in his old practice without troubling himself about the results of the recommendations of the enlightened professor of chemistry or geology. When farmers began generally to adopt thorough draining, subsoil ploughing, and high manuring, agricultural chemistry was then most required. Though, practically, there was no doubt that a drained field would produce more than one where the roots of the plants were chilled and obstructed by impervious substances in their search for food, science explained how the admission of air and an equable supply of moisture nourished them. And when chemical manures, as well as the old farm-yard dung, no longer perish in an over-moist bed, science was also at hand to explain what special constituents were most required for special crops and special soils, and, what perhaps has more than anything else conciliated the affections of the agriculturist, to protect him readily, by cheap analysis, from those who would take advantage of his eager rush for purchased manures, to cheat him by vile counterfeits and adulterations. To enumerate all the steps of progress, or ways in which chemical science has already operated, would far exceed the limits of this Essay. A new era was introduced when its utility was generally acknowledged.

To explain fully the system of the Deanston thorough draining is not our province. We quote one piece of statistics from the *Quarterly Review* of 1844, with reference to the commencement then of drainage on a large scale on this system:—'During the last thirteen years the Duke of Rutland has drained 5500 acres, and laid in the ground about 11,000,000

of tiles upon his property in Leicestershire.' We should be within bounds if we estimated the addition of agricultural wealth to the nation from this extent alone at 3000*l.* yearly, or a sum of 100,000*l.* added to its capital. The principles of furrow drainage are of course the same whether stone or tiles be the material employed, depending somewhat on the situation of each particular locality. But now that cheap communication and mechanical skill have come to our aid, in four cases out of five the tile will supersede, on the score of cost, the use of the other material, especially in what we call the best time for the farmers, when the labourers' wages are, as now, on a high scale. The Marquis of Tweedale, Etheridge, and others, were the first to suggest and carry out improvements in machines for the making of tiles. Since the period we speak of, various other modes of equal or superior merits have come into operation. Fowler was the first, within the last few years, to carry out, by the aid of steam, mechanical operations not only for making the tiles, but for performing a great deal of the manual labour required to dig the opening, and laying the tiles in their bed when opened up.

We may also observe, that between 1825 and 1844 the facilities of purchased manures greatly increased. The declared imported value of bones, we are informed by Mr. Pusey, was, in 1823, 14,000*l.*—in 1836, 256,000*l.* Since that, others, perhaps more economical, have come into the field. The supply of guano has enabled many a ton to be added to the turnip crop per acre, to reproduce its value and benefit the soil, when that crop was used for the production of meat; and during such a process we call in the aid of the animal, to be viewed in some respects as a living manufacturing agent, to add to what always should remain the staple fertiliser, good farm-yard manure.

Though still more developed lately, even before 1844 the aid of mechanical invention and steam applications had done much for agriculture. Even during the first few years the shows of implements of the Royal Society had brought forth great variety, and paved the way for further improvements. The tile-machines we have already adverted to. In 1841, at Liverpool, Ransom first brought forward the portable steam threshing-machine; and since, the ratio of increase has been a very quick one—to use a technical term, almost a geometrical progress. About 1844, low prices and the influence first of the tariff of 1842, next the abolition of the Corn Laws in 1846, depressed the vast numerical majority of British agriculturists. We blame not those who were then almost inclined to despair of their country, because it required much intelligent

thought—we may add; much good fortune too—to bring us so successfully and speedily over the succeeding crisis. Doubting ourselves, at the time, of the policy of the change, we are rejoiced to think that probably at no future period of our history will there be necessity to revise the propriety of these measures. For two or three years after the change, the deficiency in supply and high prices served to disguise its full operation, and give a little time to meet the altered circumstances of the case. But when wheat, as in 1849 and 1850, was under 40*s.*, 56*s.* having been assumed—we do not say whether rightly or wrongly—as the lowest price at which it could be cultivated, and the produce of an acre of oats was worth less than 3*l.* (we know of cargoes from the north of Scotland that netted some 11*s.* only per quarter), added to the great emigration, we can hardly wonder that many practical farmers doubted the propriety of going on, and that we seemed to be drifting to the state of increase of grazing instead of arable ground, and to that which Pliny speaks of in ancient times, *Latifundia perdidêre Italiam.* By 1851 or 1852, the crisis appeared happily surmounted. Prices, owing greatly, we believe, to Australian gold, had considerably risen, and the utmost credit is due to those intelligent men—not the least so, although we differ from many of his views, is a Scottish agriculturist, Mr. Caird—who still resolved, if possible, to convince their fellow-countrymen that 'high farming might be a substitute for protection.' Under favourable circumstances, no doubt the improvements at Auchness and many other model places added profitably to the wealth of the enterprising farmer—doubly and trebly so from the recent rise of prices. If the crisis were, under circumstances such as could be foreseen, to be got over, it could only be so by increased skill, increased capital, and, what came in at the proper time, greatly increased facility of market, by the rapidly developing railway communication.

We have spoken but little of legislative measures as an aid to agriculture. The Tithe Commutation Act, the importance of which, both in this and in a social point of view, generally cannot be over-rated—the measures which aided the loan of capital, either by authorizing holders of settled estates to borrow under proper restrictions, or the Government loans on payment of interest for a limited period, have done much for agriculture. Hundreds of similar instances to that of the Duke of Rutland, since 1847, could easily be quoted. The expenditure alone of three millions or more of the public money, invested in the most secure of all banks—the soil—

has added, perhaps, food annually for one or two millions of our population.

Since 1852, we may see the more speedy and wide-spread development and progress of all those aids to agriculture. We cannot possibly enumerate them all; we have barely done justice to the subject in glancing at some of the most prominent, and others we reserve, as not yet fully developed, to be noticed in the sequel. The increased furrow drainage and deepening of the soil, the improvement in appliances of various mechanical machines, steam particularly, the aids of mechanical analysis, the increased education, the rapidity and cheapened conveyance by steam-vessel and by railway, the importation of foreign manures and substances for increasing the food of cattle, to say nothing of many others which were in established practice more than twenty years ago, and others we may have omitted, have been paralleled in no age or branch of industry, and have added since 1836—considering especially the increased prices of productions, concurrent with a better condition of the poorer classes, to enable them to buy such—a mine of solid and substantial wealth to the resources of our empire which it is impossible perhaps to estimate statistically, and impossible certainly, from its importance, to over-estimate.

II. So great detail as we have endeavoured to give in the first branch of our inquiry, will not be required to illustrate the condition of British Agriculture in comparison with foreign nations; as this will be shown in the only case on which we shall almost enter at all by giving the result of a few statistics—and these ready to our hand—by the eminent French author of *The Rural Economy of England, Scotland, and Ireland.* This work has been translated by a Scottish farmer, and those who wish to see greater detail of the results than we shall here give will find ample reward in consulting it.

Belgium and Upper Italy, from peculiar causes, will probably bear off the palm as to agricultural riches compared with their extent. The hive of Flemish industry has the same advantages which we have alluded to as possessed by parts of England where manufactures are most prevalent; and the rich meadows of the Po can only be successfully rivalled in luxuriance, should the sewage system, in which the ingenuity of intellect is at present much at work, be brought into practical bearing. But these countries, so far as political considerations are concerned, barely affect the result. English farmers can never be overwhelmed and undersold by Belgian produce, nor have we much direct connexion with the Italian

agriculturist. With our neighbour of France the case is different. She undoubtedly has the same or equal superiority over the rest of Europe as we believe we possess over her. And were the same capital, and energy, and agricultural advantages diffused over her greatly larger extent, without a proportionably larger population to feed, the corn-grower and meat-producer of Britain might at some time be in danger of loss from competition with her, more than from Russia or Poland, or what was at one time dreaded, free importation from America. It is satisfactory to find that one of her own children, who we may be sure has not formed his opinion without a due wish, if he could, to adopt a contrary one, more flattering to the *amour propre* of his countrymen, finds himself obliged to confess in all points our superiority. He investigates the *How* and the *Why*, and we shall do little but enumerate a few of his results.

Arthur Young had speculated some seventy years ago upon the same subject, and while acknowledging the superiority of the soil and the climate of France, claimed, not without justice, the higher praise—involving as it does superior mental energy and activity—'of knowing how to turn our climate to the best account, France being in its infancy, compared with us, in this respect.' This is not the first time that the adage of necessity giving rise to invention has been so illustrated. The Scotch, we have seen, comparing advantages and disadvantages, have surpassed the English in productive farming. Ireland, with a richer soil and climate, falls vastly behind both. Undoubtedly the genius of the people has much to do with this. The same Anglo-Saxon energy which gives us mercantile and military superiority where the two nations have come in contact, has more to do with the result than Léonce de Lavergne would probably be willing to acknowledge. It is easier to trace secondary and apparent than final and hidden causes; but before we illustrate this, we shall, following his order, enumerate the advantages we possess in respect of gross produce of crops, cattle, and sheep, and the superiority of capital, as shown by rents, profits, and wages.

We are not in general disposed to place unlimited reliance on statistics, even when compiled with more accuracy and judgment than what is yet manifested regarding agricultural ones, either in England or in France. The best authorities differ considerably from each other; and even where attempts have been made of late years to collect details, as in Scotland, every unprejudiced person who has paid attention to the practical working, is aware of the great defects and errors necessary to it. Nevertheless, so far as a general view is con-

cerned, those quoted by our French author may be held as correct. Comparatively, there can be little doubt on the subject, though, were we to compare together and with him our best authorities, such as Porter, M'Culloch, Spackman, and others, we should find many puzzling discrepancies. The extent of acreage in Britain, compared with France, is something near the proportion of three to five; the amount of acres in England Proper about thirty-two and a third millions. According to the French measure, while France has fifty-three hectares, the British islands have thirty-one—each hectare containing two and a half acres. France has a great proportion in cultivation; its soil and fertility in general is greatly superior; but still the fact is true, that 'thirteen millions of hectares equal in cultivation to the thirteen millions hectares in England, France does not possess.'

The first great product noticed by our author is that of sheep. We certainly were startled at his summing up, 'that the average return of an English sheep farmer is six times greater than that of a French one.' There is, however, some reason for the assertion, though we can hardly think it may not be over-estimated. M'Culloch and the French statistics agree pretty nearly as to the whole number—some thirty-two to thirty-five millions for each country. But in France, if they had the same number in proportion, there would be sixty millions. Again, from the great attention paid to breed in England, and selection of animals which come early to maturity, the weight in meat of an English sheep, which may average for the whole country from eighty to one hundred pounds, is somewhat more than double what is attained in France. The wool produce is reckoned about the same; but the Scottish translator and commentator is of opinion that some superiority in this should be accorded to our own country.

With regard to cattle, it is stated that there is a sensible difference in favour of Britain, though not so striking as in in sheep. The proportional numbers are supposed as ten to eight million head. The milk production of these animals is stated as double for Britain in quantity, and the price double in money value; that of France in this respect is stated as 4,000,000*l.* annually—in Britain, four times as great. Though France has some superiority as to the amount of labour performed by working cattle, it is this which entails a loss both with regard to the milk and the meat produce. The meat produce is stated for the British Isles at 20,000,000*l.*, for France at 16,000,000*l.* It is true, one of our authorities, Mr. Spackman, estimates the meat produce at 45,000,000*l.*; but this is considered a good deal exaggerated. The basis of cal-

culation of value is fivepence per pound, accurate no doubt a few years ago, but since then it has considerably risen in value, which, however, in no way affects the comparative result. But it is useless now to attempt to prove our comparative superiority, after the Poissy Show last year, both as regards symmetry of animals, of weight and quality of meat.

M. de Lavergne takes credit to France for 8,000,000*l.* value of work, as to which, *per contra*, nothing is set down. The comparison he brings out is 55*s.* per head and 4*s.* 9*d.* per acre, as against 85*s.* per head and 10*s.* per acre with us.

As to pigs, the United Kingdom produces double. In the money value of our horses, we possess equal superiority. The only animal product in which, from advantages of climate, the French can easily surpass us is that of poultry, largely consumed instead of butchers' meat in France; and the exportation of eggs, as well as the revenue of all the kinds of fowls there, gives them an advantage of some 3,000,000*l.* annual value.

But it is in the cereal crops that our greatest superiority is apparent, and this is the more remarkable because the French direct to them their chief attention; whereas in England we arrive at it by a more indirect course, raising roots and grass for the production of animals, so as to afford manure for the other crops. When the late Mr. Pusey wrote in the *Agricultural Journal* of 1840, he estimated the number of bushels of wheat per acre at twenty-six. He enlarges on the great addition, if even one bushel could be added—no very difficult matter for English capital and enterprise—per acre, as adding some 1,200,000*l.* annually, at the price of 50*s.* per quarter, which is less than is at present current. Since then, probably, the advance in agriculture may have raised it to twenty-eight (several statistics in the Scottish counties, though I think incorrectly, making some years thirty-two, or even higher); and this is our French author's view. But take either calculation, and there is a vast difference between that and the French estimate of thirteen and a half bushels. After this striking illustration as to wheat, it is unnecessary to allude to the other cereal crops. The number of acres in both countries, in roots, potatoes, turnips, and beans, is estimated as the same—about five million acres; but that *productive* crop, the summer fallow, in England is little above one million acres —in France just ten times as much. Herein lies the secret, as we shall notice in detailing the cause of our superiority. France of course takes credit for some 20,000,000*l.* annually as produce of vineyards, as to which we have nothing to set down except a small comparative produce of flax, in Ireland

chiefly, and hops; while France again has the beet, tobacco, and various other valuable products.

Without going into more lengthy detail than the time we have already trespassed on the reader's attention would justify, we could not bring out so clearly as we could wish the total value of all agricultural produce. We regard this the less, as no result of minute accuracy can be given, and we content ourselves with stating M. de Lavergne's calculations of the annual amount per acre:—

With respect to the average value of land, which is usually estimated by its productiveness, that of England Proper is worth 40*l.* per acre, and the rest of the United Kingdom, exclusive of the Highlands of Scotland, about half of this figure. The Highlands of Scotland, with the uncultivated lands, are worth at most 2*l.* per acre. Deducting twenty per cent. from these prices, we obtain for England an average of 32*l.*, of the Highlands 32*s.*, and 16*l.* for the rest of the United Kingdom. The cultivated lands of the northern half of France may be worth, on an average, 24*l.* per acre; and those of the southern half, 16*l.* Valuing the eight million hectares of uncultivated lands at 2*l.*, and the eight millions of forest grounds at 10*l.*, we find a general average of 16*l.* per acre.

The general average of gross product, which is stated in detail, brings out 135 francs per hectare for Britain; for France 100, or about 2*l.* annually per acre; that of Britain being about 3*l.* 10*s.*, the uncultivated grounds of course greatly reducing the average. We think this estimate below the average, especially since prices have risen; but this does not affect the comparative calculations, the sum being, that the product of British agriculture as a whole is to the product of French agriculture as 135 to 100; and comparing England alone with France, the former produces twice as much as the latter. He also enters into details to show how the various items of rents to the landlord, profits to the farmer, and wages to the labourer, relatively stand. It is unnecessary to enter upon these, except the latter, in order to illustrate the well-being of the general population, for while the annual produce is greater, and the capital employed greater, of course the farmer's profit and the rent he can afford must necessarily be greater too; and separate calculations of these only verify, they do not present a different aspect of the great fact as brought out and enunciated before. With regard to the general comfort of the people, the question of wages is one to be looked at attentively. We entirely sympathise with a truth which is often but imperfectly comprehended both by farmers and master manufacturers, stated concisely in the concluding sentence of the French book—'Let us take care how we

speculate on low wages through a superabundance of hands.' This was one of the causes of the great inferiority in produce, and late unhappy state of Ireland. 'Good rents cannot be kept up unless with good wages.' Before 1848, M. de Lavergne estimates the average value of our labourers' wages in England at 9*s.* to 10*s.* a week, in the richest districts at 12*s.*; in France not more than 8*s.* After a depression for a few years in England, they have again risen considerably higher than before. In many parts of the kingdom, 15*s.* a week or even more are necessary to secure a labourer (3*s.* 6*d.* to 4*s.* per diem has not been uncommon in the late harvest). It is supposed that the amount per head of consumption by the people is nearly the same. It is said the English consume more than the French; the Irish consume less. With regard to meat, however, the consumption is greatly in favour of our own population, and in the last few years especially. When English and French labourers have met, as in the foreign railways, the consumption of food, and the work performed, have been on a greatly larger scale on our side. By the census of 1841, the population was as twenty-seven to thirty-four millions; now we may say twenty-eight to thirty-six millions —the English maintaining one head for every two and a half acres, France requiring nearly four acres. But here again some allowance must be made for our importation.

What of late years has struck foreigners more than anything else, as at our Exhibition of 1851, and the more recent French Show, was our vast superiority in mechanical appliances, and implements of all kinds. It has been recently no small or unimportant branch of our trade—witness the gigantic establishments of Garnett, Ransom of Ipswich, and many others, to supply foreign countries and our colonies with them. The French recently took a correct step in reducing to one-half the duty on farm machinery. Now such superiority is, perhaps, in the eye of those who look forward, of more moment than other marks of it. It shows that the intellectual skill is not likely to desert us. Philosophers might otherwise account for our flourishing state as regards agriculture, by the influence of political causes; by our tastes for country life; by our supply of coal rendering unnecessary, as in France and elsewhere, so large a portion of surface to be taken up with wood for fuel; and by the large accumulation of capital. Now all these things, unaided at least by intellectual skill and energy, would give us merely a temporary and uncertain basis of prosperity. While sound mental energy and activity endure, we are not likely to let slip the advantages with which Nature and Providence have hitherto favoured us.

One of the great causes of our superiority in production is, undoubtedly, the different view which we take from our neighbours regarding root and cereal crops. We regard the first as the best and necessary step to the other; while nearly the fourth part of French soil is under cereal crops, less than one-sixteenth of ours is under wheat, and a great part of the French soil bears inferior crops to wheat. It is therefore clear, that to grow such crops profitably and largely, it is even necessary to diminish the extent to prevent what is taking place so widely, and for a time perhaps irreparably in America, the exhaustion of a rich and once fertile soil. The contrast is best seen when we consider that in England proportionally each acre of corn receives the manuring afforded by consumption, not only of root crops, but also of grass lands, to an infinitely greater extent.

One striking advantage we possess is, that so small a proportion of the community requires to devote itself to agricultural pursuits. Though there are differences of computation on this head, there can be no doubt, comparatively, of what is stated—that the rural population is in England one-fourth or thereby of the whole; in France, upwards of one-half. The 'effective wage,' as it is termed, seems considerably more in our favour than this proportion shows. In France forty persons are necessary to produce an average product of one hundred francs per hectare, while in England thirty cultivate the same quantity so as to produce two hundred francs. The reduction of manual labour has been, therefore, one of the bases of our system. The horse is a cheaper and more effective instrument than the bullock in France, and our superiority in implements and steam power of late of course is immeasurably superior to either. We need scarcely here stop to show the fallacy of the notion that with the spread of machines, labour, on the whole, is interfered with. Granted that a reaping-machine or steam-plough does the work of many hands, are we not to calculate, on the other hand, the many additional acres hitherto too bad to cultivate properly, which may be brought under the plough by the diminution of expenditure, to say nothing of the fact that, in the very making of these machines, a new trade for export has been created, and probably more hands employed on it than were previously engaged with less profit on the work they have come to supersede? While France has so many, comparatively, of her population taken up with the manual labour of her soil, these, without a great change of system, cannot be diverted to rival us in the production of machinery, which, as it increases, will still more increase the distance in economical production between the two countries.

But for this difference of system there are causes deeper-seated than what may be attributed to France lagging behind us in adopting the turnip system and the diminished breadth of cereals, on which our profit so much depends. We are inclined to attribute more 'influence to the constitution of property' and constitution of farming than the French author is. He takes up several pages to show that property in England is not, as he says, so much concentrated as is commonly imagined. He cannot, however, but admit that in France property is much more divided, though he shows that the actual number of landed proprietors is between five and six millions, instead of nearly double that number, as was the former idea. The real difference is, as he admits, though he does not seem inclined to give full weight to the fact, that between the largest class of proprietors in France and the smaller ones there is not such gradation as gives stability to our system—'that the English gentry have at their backs the immense fiefs of the aristocracy.' With us, when an Earl of Leicester or a Lord Spencer takes up a new improvement in farming, or starts a new idea the value of which is apparent, there are hundreds and thousands of substantial gentry, and yeomen, and tenant farmers, to take it up, discuss, and carry it out. In France they are dependent on Government for what ought to be spontaneous enterprise. The same mischief acts on agriculture in France as political theorists hold is the great difficulty to establish on the ruins of the revolutions of 1789, 1830, and 1848—a stable Government. There is no large class of substantial proprietors to back up the Crown. Swept away as the nobility and landed proprietors were in 1789, the new class hurried on to subdivide what cannot for long establish a solid weight to counterbalance the multitude of salaried officials, or the *enfans perdus* of the towns. We think that the influence of large property on agriculture, as compared with France, is not, as our author says, exaggerated. We do not deny that it would be wrong to lay down that without it no progress in farming, in France or elsewhere, can be made; but we say that it is one of the causes which has tended, and will probably tend in future, to increase our agricultural wealth. The question of large or small property is too wide a one to argue here. Those who advocate the first have on their side Arthur Young, and the intelligent observer of modern Europe, Mr. Laing; but whether the want of it is a bar to progress in France or elsewhere, with a society different from ours, it is not necessary to discuss with a view to our present purpose. The principle requisite is undoubtedly that property should be rich, and perhaps a rich and small proprietary might be of

more benefit than a large and embarrassed one, but the rich and small proprietary certainly has not been exhibited in France. And though it be true, admitting for the sake of argument, with M. de Lavergne, that the most productive lands are those whose owners have about 1000*l.* a-year income, yet without a numerous body of large proprietors how could there exist large farms at all? In the best districts, with land at 2*l.* an acre (a low rent for the Lothians), a five-hundred acre farm would absorb a property. It is to our large proprietors that we owe the large farm system being tried at all; and though, on the whole, we admit that in some parts of the country they may often be broken down into smaller lots than now here, yet in considering our farther tendency to improvement, we shall allude to the facts that modern improvements and the farther application of correct principles to the division of labour, require, in most parts of Britain, the extension of the large farm system. But the true reason in this view of our superiority is, the greater wealth of the farmer, whether he be proprietor or tenant. The debt on land, we are told, is less injurious than in France, because it is borne by richer families. Until more capital, in proportion to their extent, is acquired by the holder of the French soil, we need not be afraid of his making rapid strides to rival us.

The constitution of leases is no unimportant part of our advantage, compared with the *métayage* system which prevails over a great part of France. Its adoption is of course a confession of the want of capital either in proprietor or occupying tenant. Were tenants to possess capital necessary, they would of course prefer the English independence, and greater chance of profit from their own skill and industry; and did the proprietary possess more, they would naturally prefer paying the tiller of the soil his fair wages for a fair day's work, to division of the profits between them. 8*l.* per acre a few years ago was said to be a fair capital for a farm in England, and 16*l.* or even 20*l.*, besides considerable outlay on the part of the landlord for lasting improvements, is now thought the ultimate point required.

The blame of insufficient capital in France rests on the small proprietary, and their unwillingness to become occupying farmers rather than proprietors. Undoubtedly there are more places in France than with us adapted for small farms, such as in Flanders, as on the banks of the Garonne, the Charente, and the Rhone; but it is a question how far, unless there is a large consuming non-agricultural population, these will succeed so well as in the spots best adapted for such a system amongst us. Where roots and grass grow well, when the soil

and climate, as in the Limousin, are nearly those of a large part of England, our author admits that everything calls for large farming, and laments that it is small farming which there goes on. Surely, with this admission, he might have attributed more than he does to the goodness of that system which we have adopted, and in general are extending, as the one best adapted to make the 'most of our soil and climate.' With a view to modern improvements, we are not sure that we agree either with M. de Lavergne or his intelligent translator, that the middle-sized 150 to 300 acres will increase. Even that is small, to give scope for many modern appliances, and the difficulty of increase from the daily loss of traversing a distance of half a mile or even a mile from the steading is likely to be diminished by two or three circumstances which we shall note in speaking of our future tendency to progress.

Our author attributes much of our superior condition to our taste for country life. Undoubtedly, much of our improvement has arisen from the fact that both proprietors and tenants have hitherto shown little tendency to put their savings into any other bank than the soil. The Frenchman likes show and glitter and luxury (need we say the passion of the population has been for military glory rather than for the fruits of plodding industry?), while the agriculturist in Britain has had little temptation to make any other investment of his surplus. He used to despise too much trade and manufactures—his thoughts and those of commercial men were too much apart. Now the case may be somewhat altered; but if, on the one hand, the agriculturists have a tendency to invest money elsewhere, where there may be a greater seeming profit, on the other hand, the long-established love of the country, and facilities for the commercial man spending at least a part of his time there, are acting in favour of increase to agricultural capital, and of cementing that union among classes which is best for all our interests.

We cannot too heartily agree with our author that on good public feeling, which has so long preserved us from despotism and revolution, and the excellence of our political institutions, our progress in a great degree has depended. When revolution begins, capital is either hoarded up and hidden, or flies. The uprooting of all society in France seventy years ago has placed her behind England *centuries*, we would say, but that we know the world lives faster, and that more progress may take place now in one year than in ten before, both as to development of manufacturing and commercial wealth. In Britain the proprietor has that feeling of security which tends to make him prefer landed investment at a lower rate; the tenant, either from the security of a lease, or, as is more won-

derful over a great part of England, honest confidence in the integrity of his landlord, has no fear of investing on the property, and ultimately for the benefit of another. It is not 'fertility but liberty,' we may add *security* for capital, which is of course involved in the idea of liberty, 'which cultivates a country.'

A most important influence tending to our prosperity, as noticed by M. de Lavergne, is that of markets. We have previously, in this Essay, fully discussed their influence; and the observations we made in speaking of the improvement of our agriculture, commencing at the end of the last century, need not be repeated here. No doubt, as is observed, such things take place in France; but though new means of communication and development of large hives of industry do take place there, it is of an infinitely less striking character than in what we take pride in calling our country, the 'workshop of the world.' The capital made by manufacturers, besides the advantage of affording us a ready market, has also been reflected back on land, and every day, more and more, we can quote instances where the security of land investment, though slower, and more uncertain year by year of large profit, is preferred by him who has made it from what may be called the more gambling speculations of mercantile or manufacturing adventure.

Commerce and manufactures bear the same relation to agriculture as the cultivation of forage crops and the multiplication of animals do to cereal production. At first they seem opposed to each other, but fundamentally there is such a strong connecting link between them that the one cannot make any considerable progress without the other.

Such are the chief points noted previous to what is called the 'Customs Reform of Sir Robert Peel.' We avoid discussing the effects of that, as an unnecessary plunging into the waves of political controversy. But most of his opponents at the time will probably admit that had the rise in prices, which from many causes has taken place since 1853, been foreseen, their ideas of the blow it would inflict on agriculture were over-estimated. From this rise in prices the agriculturist has reaped the benefit of the good; and though it caused for a time much depression, on the other hand—with some as a matter of necessity, and others from a belief in its ultimate good—a spirit of improvement was awakened, of which later circumstances have enabled us to reap the most extended benefit. It is from some new principles that have been entered on since that time, that our highest hopes of further progress in maintaining our superiority over other nations arise.

Such, then, are the principal points in which confessedly by the French themselves our agriculture is superior to theirs. Our mechanical superiority; our adoption of a better system, by which the produce of several acres of grass and root crops is made to supply manure to each acre under a cereal one; the influence of capital; a large and wealthy body of proprietors and tenant farmers; the security and freedom of our political institutions; our close connexion with, and the wealth in, the country, derived from our manufacturing and trading population, to say nothing of other natural advantages—of our coal-fields, and the plodding industry and energy of our people—give us a start in the race which it will take for our neighbours long years of increased energy to enable them to come up with.

Of other European countries we need say but little. From the notes of the late Professor Johnston's tours in Denmark, Sweden, and other countries, we see that much more depends on capital and industry than on natural advantages. He quotes Denmark as an instance where much more corn is produced than is required for the subsistence of the population; and yet the stimulus to increase it for exportation is wanting. It, as well as most other countries, is a hundred years behind us in all that relates to the improvement and progress of agriculture.

Russia, with its subject State of Poland, has been one of the bugbears in the eyes of many of our agriculturists. Now that it has declared its intention to become a 'railroad-making and corn-growing country,' a few years may perhaps show what it can do by adopting modern improvements. What might have occurred had James Watt accepted, instead of rejecting, an offer pressed on him to transfer his skill, and as to which he was long in doubt, and in consequence had manufactures happened to be developed there instead of here—it is perhaps idle to conjecture; but there is one principle which would lead us to think, for long we need fear from it no ruinous competition. Few nations, except in the rudest state, export raw produce. As Russia raises her wealth, the consuming powers of her serfs will increase also, and probably a sign of any increasing wealth may possibly be a diminution of agricultural produce for export. We certainly noted last year, with some astonishment, observations made at an agricultural meeting at Carlisle. Sir James Graham is reported to have almost wished the Russians for long to continue rude, to save ourselves from competition. We cannot think this doctrine, if correctly reported, savours either of enlightened political wisdom or correct economical principles.

From the more enterprising spirit of America we might probably have more to fear. Few inventions that aid us here will long remain unused on the other side of the Atlantic, and in the energy of an Anglo-Saxon population, as in other branches, we see our most dangerous rivals. But with regard to land, the Americans as yet seem but little to be guided by that caution which prohibits the killing of the goose for the sake of the golden egg. They seem more inclined to work at their virgin soil, trusting too much to its extent and riches, than keeping in undiminished fertility what has once been cropped. This is an error of which they probably may soon feel the bad effects. Over a large portion of their territory the slave labour and the difference of their cropping prevent them from coming into immediate competition with the three or four grand products of British agricultural industry.

Thus we see how our present superiority, notwithstanding superior climate, extent of territory, and cheaper manual labour in many parts, has arisen, and is now maintained. In conclusion, we have to advert for a little to how far such is likely to be continued, and to what we have to turn our view in looking forward to further progress.

III. We have left but little space to discuss this subject as it ought, especially as we purposely omitted in the former part adverting to several improvements which have been begun, though we cannot regard the principles on which they rest as brought to practical bearing, or the ideas as yet become *faits accomplis*. Thus, a sketch of our progress is incomplete without adverting to the greatly extended application of steam-power—to the distribution of liquid manure by pipes and pumps, as in operation on several farms throughout the country, or supplying by other means to the soil the vast wealth contained in the sewage of towns, which hitherto has run to waste, or even been positively noxious. Chemistry has already done much for us, and more undoubtedly will be done when the practical farmer is better accustomed to scientific education. Then we may expect 'science with practice' to go more fully hand in hand. We could not fully discuss the subject without entering into a wide range of subjects which are connected with other branches not so directly bearing on agriculture, namely, the improvement of our social system, and many legislative measures. The enormous consumption of wood for railways alone requires a supply of that article, which may be obtained by planting, not only with a view to that, *per se*, but also to the shelter and enclosure it affords to the improvement of adjoining land, which is or may be arable. There are still millions of acres with regard to which this is a first step to

all improvement, and it is remarkable that when a crop of wood has been taken, after forty, sixty, or one hundred years, or thereby, the greatest improvement on much of our poor upland soils has been effected. Science here, as elsewhere, has borne out experience, and even found out the very kinds of timber, by the annual shedding of the foliage of which the soil is more or less benefited.

The discussion alone of large and small farms, of the allotment system, or of peasant proprietors, would form a subject for more than one article. While we believe that the tendency of the age is to apply more gigantic effort and commercial principles to the pursuit of agriculture, and thereby, in most instances, to reap the advantages of division of labour, and less proportional cost of farm-buildings and enclosures, and many others that may be pointed out when farms may be increased beyond even three hundred and five hundred acres; yet we allow, on the other hand, that in the neighbourhood of many large towns, often a diminution may take place, and that there, as well as wherever a few peasants or tradesmen are associated together in a village hamlet, the allotment of small portions to each family for spade culture, either in occupancy for short periods or perpetuity, may be most advantageously carried out, not only as regards pecuniary profit, but—what ought to be considered more than it has been by farmers—the social condition and comfort both of our labourers and of our artisans and tradesmen.

But the subjects which we might, did space permit, bring forward in this view, are too manifold. We shall sum up in three heads the principal means by which we hope to maintain our progress and prosperity in agricultural increase.

1. There is no doubt a large amount of our increased productiveness has arisen from our being able to improve and increase the product of a large extent of ground hitherto producing nothing at all. It is much easier to raise half-a-dozen quarters of wheat, for instance, from an acre or two of new land, than to increase the product of twelve quarters, we shall say, to eighteen, on ground that has been long in cultivation. The greater the progress hitherto, the more will it tax our energy to keep the same advance. And this it was which, looking to the increase of our population and the necessity of keeping pace with it, alarmed the minds of some philosophers—as Malthus and his sect. No doubt, in a highly civilized country, in any art, a man requires more activity and energy to keep his ground than he did twenty years ago; but there is no reason to suppose that as such activity and energy are required they will be wanting. But still, in agriculture, people have

made up their minds that new processes are required, and not merely extensions of old improvements. Though there are still many bogs in Ireland, and mosses in Scotland, and high grounds to be enclosed and sheltered and brought into cultivation, and much heavy clay land to be thorough drained, yet to all these we see a limit which in a few years might soon be reached. The chief question, then, is—Are there new agents already appearing in view, as means to be employed, with a well-grounded hope of success, to cheapen the cost and increase the amount of production?

The first of these we shall notice is the application of mechanics, and especially steam-power. It has been remarked, as one of the most hopeful signs of healthy agriculture, that it is hardly to be said that the science of mechanical agriculture is as yet fully understood. Doubtless, of late years vast numbers of machines have been tried, experimented on, and become generally known; but it is yet a moot point which of various contending reaping machines ought to be most approved of, nor are they yet generally in use. It is only within a very few years that steam has been applied to threshing machines. Smoking chimneys are now to be seen in all parts of the country, and in a few years more, especially where a supply of fuel is easily obtained, few farms of great extent will be without them. It is more likely that two or more farms will be thrown together, than that small farms will be continued, where the advantage in this and other respects cannot be fully enjoyed, or else one portable engine must do the work for several. From the Report on the Paris Agricultural Show of 1855, we note a return from one manufacturer alone, from which it appears that in 1851, machines of the aggregate amount of 1349 horse-power were sold by them—in 1855, 3332. This may probably be taken as an index of the ratio of progress in this respect. And, in some cases, portable railways are employed for saving manual and horse labour.

Some may feel disappointed that as yet the great work has not been fully accomplished of economical steam-ploughing. At the Salisbury meeting, some accidents, which at present seem inevitable, prevented assent to the view that practically the invention had been successful. Last year the prize was within an ace of being awarded (we believe it was postponed by the casting vote of one judge, who would have voted the other way but from the fact that the invention was partly his own, and that he speedily hoped for more economical improvement), and this year the many successful trials throughout the country show that the invention will ere long introduce a new era into agriculture. Whether Fowler's steam-plough or

Boydell's traction-engine is to be the best, we believe there is no doubt that ere long the soil will be turned up to the depth of eight or nine inches at a cost greatly less than the present ploughing by horses at 8*s.* or 10*s.* per acre. There are ploughs in operation now in different parts of the kingdom, where, though the inventors and proprietors must have a profit which the farmer who could buy and use such would save, even now, as around Ipswich, in Berwickshire, and Stirlingshire, the work is performed with economical advantage.* We saw Fowler's machine at work on a field, certainly under favourable circumstances, where the work of twenty horses per diem seemed fairly done. The cost of the apparatus was about 430*l.*, scarcely the original cost of ten horses at present. For wages, tear and wear, and fuel, about 30*s.* per diem would be sufficient—certainly a saving of about 2*s.* or 3*s.* per acre on the head of maintenance alone, to say nothing of original cost. But the greatest advantage will be in ploughing at greater depths than the ordinary plough can go. Here the ratio is constantly increasing in favour of the former, and ere long a cheap and ready means, as to a great portion of the country, will be afforded of deepening the soil and reducing it more and more, as it ought to be, to the state of an extended garden.

Now, in these mechanical and steam-power appliances it is evident we have a great superiority over most other countries. It will probably be long before the trade of supplying them with machines passes out of our hands; and even were we to be rivalled here, the abundance of iron and coal must, so far as we can at present foresee, give us a manifold advantage.

2. The second point, from the application of which we hope for farther triumphs in production, is the means we may possess of turning to advantage a vast supply of materials at present almost wasted, or even pestilential. The Thames alone annually carries down to the sea, or spreads around in noxious influence, hundreds of thousands of pounds in value of manures. The public intellect is alive to the importance of the subject, and from the success of the experiments hitherto tried, we need not doubt but that a vast mine of agricultural wealth will soon be made available. Connected, of course, with this subject is that of liquid distribution. It may not be long before the pipe system of manuring, as begun, we believe, by Mr. Huxtable, as carried on by Mr. Mechi at Tiptree Hall, and various farmers

* Within the last few days the prize of 200*l.* has been given, thereby recognising the success of the principle of the invention. We see other statements of the cost—as much as 600*l.* instead of 430*l.*, as named to us by an intelligent machinist, perhaps as the lowest cost to be by-and-bye attained.

in Ayrshire, &c., may be made generally available. The French are alive to its importance, and sent over this year commissioners to report upon it. But here again the steam-power, and our superior capital, will for long compel them to follow merely in our wake. Many towns, we believe, in the West Riding of Yorkshire especially, from local situation, have superior advantages for the application in this form of sewage manures. The example of such irrigation at Edinburgh—though the example, if followed exactly, on the score of health, can by no means be commended—shows what can be accomplished. The application of the sewage of Rugby to about five hundred acres appears to be eminently successful. Other places, as Totness for instance, may be mentioned where, in a slightly different mode, the same principle of converting a noxious into a beneficial agent may be employed, not only with respect to the health of the community generally, but also to increased production, with economy. As yet, this invention is only in its infancy.

3. From increased attention to education in all the sciences which bear on the profession of the farmer, we anticipate the best results to British Agriculture. He is now fully sensible of the benefits of chemistry. All enlightened men class the knowledge of the principles of Liebig, which began only some sixteen years ago, as adding equal good to agriculture with the adoption of the principles of thorough draining, or the benefits of mechanical science. The Highland Society of Scotland, which has not been the last in many instances to start what is of great practical utility, has of late taken up the subject of agricultural education. Instruction in chemistry is of course indispensable; zoology and natural history are requisite; botany, to know the nature of plants and weeds; geology, to teach the nature of soils; mechanics, of course; and various other branches of which, thirty years ago, a farmer would never have dreamt. In various colleges, at Cirencester and elsewhere, in Ireland, in the chemical laboratories as of Mr. Way, in the importance attached to chemical investigation, we see the interest excited in the public mind on this subject. Doubtless in this, as in taking other leaves from our books, improving their breeds of cattle, adopting our drainage and root crop systems, France and others may be able partly to come up with us; but if, as we flatter ourselves, our men of science and native energy do not lag behind the rest of the world in other branches of knowledge, why should we expect them to do so in what is of so important a benefit as agriculture?

Though much still remains to be done, we need expect comparatively but little from present improvements extended.

As to the principles of our rotation of cropping, the breed of cattle, and many other points of improved farming, we need expect—so far as at present, with diffidence, we would venture to predict—no great advantage, though certainly some, from their more universal application. But the facts that we have lagged behind our manufacturing brethren in enlightened energy, that they before us have applied all the aids of mechanical and chemical skill, and that the benefits of education in other branches besides the operation of the plough are now at length being seen, are those which give us the greatest hope when these are diffused more amongst our agriculturists.

If we have arrived at our present height without these advantages, why should we fear when we are now likely to enjoy their aids?

It is no small branch of education to know how correctly to conduct an *experimentum crucis*, or testing experiment, in any improved or debated point in agriculture. The man of science merely may err in trying many things before he hits on a useful one. The mere ploughman will scarcely have accuracy to conduct the simplest one, and will fail egregiously in any one dependent on chemical knowledge of the most elementary kind. Several instances of late years have shown how energy in this respect might be misdirected. To say nothing of the exploded idea, as it was first proposed, of *electro-culture*, and the theory of a French philosopher of supplying to the plant by steeping all that it would need, irrespective of the soil, some views that exposure to the air is sufficient, regardless almost of natural fertility, or the supply of constituents generally thought necessary, afford instances of unpractical flights and useless experimenting, which the man who joins '*practice with science*' had better avoid.

But when principles such as those of which we have enumerated a few have been fully tested, and when only a little more skill and experience are requisite to bring them into useful and general application, patient and skilful industry and intelligent practical knowledge are then of most avail. We have done much in agriculture—much still undoubtedly remains to be done. Looking at the rate of progress hitherto, and our increased advantages, let us go on

Ever reaping something new—
That which we have done but earnest of the things which we shall do.

A. S.

TELEGRAPHIC COMMUNICATION WITH INDIA.

RAILWAYS have superseded roads and canals for the conveyance of passengers and light goods—the electric telegraph has superseded railways in the conveyance of intelligence. The mechanical genius of this age has enabled man to apply to his purposes the power that pervades all space, and seems, by its wonderful properties of traversing inconceivable distances, and producing its effects in fractions of time that can hardly be calculated, rather to belong to infinity than to this world. Yet so it is; Providence has suffered this wonderful element to become the servant of mankind; and the 'dominion' given to Adam 'over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth,' seems, in these days, to be extended to that which especially appertains to regions beyond the earth. A mechanical contrivance, called the electric telegraph, produces, transmits, and registers, at the close of its career, the effects of the electric element. Those effects upon iron, or chemically prepared paper, constitute an alphabet; and the person who witnesses them, at the distance of hundreds and even thousands of miles from whence they proceeded, can, instantaneously afterwards, read the mind of the person who produced them. Such is the power that man now possesses to communicate with his fellow-man. This power has been extensively used in Europe and the United States for political, commercial, personal, and domestic purposes—not forgetting the daily use the press makes of it. As yet, however, the telegraph does not connect distant parts of the world. The different countries that it does connect are not very distant, and do not stand in the relation of countries which are inhabited by the same race, and which are bound together by ties of blood, of language, habits, tastes, and commerce. France is only just connected with Algeria — England with Malta and

Corfu. The electric telegraph will achieve its real success, and produce its real results, when established between distant countries, more especially if inhabited by the same race. No one sends a message, in England, if the news will keep till next morning, when the less expensive post-office will bring it to its destination; and few messages are sent which are to reach their destination after ordinary business hours. But as between England and India the telegraph will have no post-office to compete with; everything that will not keep for thirty days will be transmitted by telegraph, and the force of example, of habit, and all arrangements coming insensibly to be framed on the assumption that the instantaneous means of communication will be resorted to, will speedily raise the telegraph into a connecting link between England and India of the most vital importance and extensive application. Geographically, two routes exist, along which such a telegraph could be constructed. The one lies across Egypt, along the bottom of the Red Sea to Aden, and thence along the sea bottom, parallel to the coast of South Arabia, to the mouth of the Indus. The other takes its course from Egypt to Seleucia, across the Mediterranean, then down the valley of the Euphrates to the head of the Persian Gulf, and thence along the bottom of that sea to the mouth of the Indus. These two routes have each in their turn been adopted by her Majesty's Government and the Honourable East India Company.

The Red Sea route has this advantage, that the telegraph would traverse Egypt—already the high road to India,—would share in the protection afforded to our mails and passengers, would require no protection along the sea bottom, and the position of the stations on the sea shore would enable them to be guarded from the sea, where we are supreme. The telegraph would, moreover, follow what is the mail and passenger, and to a great extent the commercial, route to India, China, and Australia. Stations can be multiplied, so as to reduce the length of the submarine stretches. Ships could send and receive instantaneous news on the voyage at one or other of the stations. The Euphrates route obliges the telegraph to traverse one thousand miles of a foreign country, claimed by the weakest existing Government, which notoriously only exercises any jurisdiction in the towns, the open country having at all times been in the possession of numerous Arab tribes, who live by plundering one another or the Ottoman officials, and occasionally combine and besiege Baghdad itself.*

J. Baillie Fraser thus describes that country:—

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'You are aware, I presume, that the country of Mesopotamia, that is, the tract lying between the two rivers Tigris and Euphrates, though forming no part of Arabia Proper, is principally occupied by Arab tribes, who, originally tempted doubtless by the fertility of the soil, so much more productive than their own deserts, have overrun, not only the greatest part of the country more immediately in question, but have also taken possession of most of the lowlands on the left bank of the Tigris, from the shores of the Gulf even up to Mousul. Thus the upper part of Mesopotamia, or the Jezeereh, as it is called by the Arabs, from the river Kaabour to the vicinity of Baghdad, is occupied by the Jorboah tribe, of whom frequent mention has been made in the foregoing pages. The Delami tribe infest the immediate neighbourhood of the city; several tribes, varying in power and respectability, but the dominant and principal one of which is the Zobeid, possess the country from thence to the Skat-al-Hye, a canal or river which crosses the Jezeereh, connecting the two great rivers. The space from that canal to Korna, where they meet, is occupied in like manner by many tribes, of whom the Ben-i-Rubbiyeh—relatives of the Montific—are the principal. In fact, all the others are but dependants on these two last-mentioned powerful tribes.

On the right bank of the Euphrates, the great tribe of Aneiza, with whom you are already in some manner acquainted, rule the country, and oppress or protect, as the case may be, a multitude of smaller tribes, who are found along the river all the way from Bur to Anah.

From Hillah to Semavah, the marshy tract formed by the overflow of the Euphrates, including what are called 'the Lemloon Marshes,' is held by the large tribe of Khezail, powerful from the nature of their country, who are agricultural as well as pastoral, living much on the produce of large herds of buffaloes, reared on the rank vegetation of the marshes, and who are especial savages and faithless plunderers to boot. From Semavah to the sea, the whole country belongs indisputably to the great tribe of Montific, who range upwards occasionally as far as Hît and Anah, on the confines of the Aneiza, and who give shelter to a number of dependent petty tribes. All these, excepting the Aneiza, are nominally, at least, subjects of the Pashalic of Baghdad.

On the left bank of the Tigris, above Baghdad, the country is overrun with various small tribes of Koords and Arabs, as you have partly seen—all robbers, who plunder travellers and commit every kind of depredation. Below Baghdad is found the powerful tribe of Ben-i-Lâm, who range the lower parts of Susiana to the Keerkab; and beyond that river the Chaab Arabs have possessed themselves of all to the sea. A glance at the map will enable you to understand the localities of these various tribes.

Now, all these petty tribes being descendants of the same stock as their brethren of Arabia Proper, or wherever else the race is to be found, resemble them in all essential points of character. They all lay claim to the virtues of generosity, hospitality, justice, incorruptible integrity, and fidelity to their words or oaths, as well

as to the high qualities of courage, independence, and love of freedom; and, acknowledging themselves to be plunderers and robbers, obviously attach no discredit to the act of appropriating the property of strangers who may not have bargained with them for the safety of their persons and goods. In fact, like their great progenitor, their hand is against every man, until at least its aid or its forbearance be purchased. They love the roving and pastoral life, moving from place to place, within certain bounds, in search of pasture for their flocks and herds; though of late years, finding a difficulty in procuring a sufficiency of grain by barter, a portion of each tribe have betaken themselves to agriculture, and cultivate a portion of its land for the behoof of the rest.

Those Fellah, or cultivating Arabs, are, however, held in low estimation by their roving brethren, who despise all such menial employment, as degrading to their free and noble race.

Whatever virtues the Arabs of former times may have possessed, it is to be feared that few have descended to their progeny of these degenerate days, at least in those parts to which Europeans have had access. As the iniquitously-acquired knowledge of our first parents opened their eyes to their nakedness, so the perception of his comparative poverty has awakened in the Arab's mind a craving for riches, a feeling which is directly subversive of the practice of either hospitality or generosity; because the easiest way—indeed the only way—for one of his habits to acquire them is by force and rapine, by taking the property of others; and, accordingly, the existence of these virtues is found proportionably rare. The same may be said of integrity and fidelity. The man who is unscrupulous as to the means of acquiring riches, will pay little regard to his promises or oaths. Accordingly, nothing is more common than instances of Arab faithlessness and treachery.

The sacred tie of 'bread and salt' becomes an empty form, which is easily evaded. The pledge given by one chief is disregarded or broken, when it suits his purposes, in the person of his brother or his uncle, who declares his own independence and right of plunder; and we hear even of an host, after entertaining travellers as his guests, and guarding them in safety on their journey to a prescribed point, himself waylaying and stripping them.'*

The Euphrates Telegraph was projected at the same time as was the railway which it is proposed to carry through that country, but is advocated as an independent scheme, to be carried out before the construction of the railway, and whether the latter is ever made or not.

General Chesney, in his lecture on the 31st July last, at the United Service Institution, on the importance of the Euphrates route to India, said that 'he placed his reliance for the security of the railway upon its being gradually brought into operation, accustoming the Arab tribes to it, and proving of great ad-

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vantage to them; it was on that account he had refused to connect himself with the telegraph, as he believed isolated wires would not be secure. That he wished, however, to see both the Euphrates and the Red Sea telegraphs executed, as he thought there would be work for both. That the telegraph by the Euphrates would require time, probably the permanent residence of an influential English functionary in Mesopotamia, and careful arrangements with the Arab tribes, who would be liable to increase their demands. That, on the contrary, the telegraph by the Red Sea could be laid in a few months, and proceed from headland to headland; that he did not think the coral reefs would interfere with the work.'

It is clear, indeed, that the telegraph would offer no advantages to the Arabs, and would excite their jealousy by being used by the Porte for their subjection. It does not follow either the route of commerce or of travellers. It is to be observed that the communication by each route would be instantaneous, though that by the Euphrates is shorter by three hundred miles, and that they are essentially competing lines, as each is to commence at Alexandria, and to terminate at Kurrachee. Sir William O'Shaughnessy, who laid down four thousand miles of land-wire in India in two years, and is the East India Company's superintendent of telegraphs, has adopted the Euphrates line; and Mr. Lionel Gisborne has advocated that by the Red Sea, and first obtained the support of an influential body of gentlemen to that project. Sir William O'Shaughnessy came to England last year. His experience having lain exclusively in land-telegraphs, his attention was perhaps, on that account, attracted to that by the Euphrates. The Red Sea line was projected in 1855, that by the Euphrates in 1856. In 1855, the Hon. East India Company promised their support to the Red Sea line; but the company formed to carry it out were prevented from doing so by the determined hostility of the Treasury, and the decided refusal of the latter to join the East India Company in any support of the project. In 1856, the Treasury adopted the telegraph by the Euphrates, and gave it financial support, in which it induced the East India Company to join. Within the last two months, the East India Company have given a guarantee of interest to the telegraph by the Red Sea. For a short time the Treasury and Board of Control refused to join in it, but have now declared their readiness to do so. The history of these changes, and of the public reasons on which they were founded, as also of the negotiations the writer was engaged in at Constantinople and in Egypt, to obtain the conventions for the execution of the Red Sea Telegraph, may prove instructive and interesting to a large class of readers. These negotiations were

protracted by the jealousy and dilatoriness of the Porte for eighteen months.

The first step for a line to India was taken by Mr. Lionel Gisborne in 1854, who proceeded to Constantinople with letters from the Earl of Clarendon to Lord Stratford de Redcliffe, to support him in an application for powers to lay a submarine telegraph from Cape Helles (Dardanelles) to Alexandria, as the first step to a line to India *viâ* the Red Sea. Lord Stratford de Redcliffe energetically supported this application, which had been previously communicated by him to the Porte and the Pasha of Egypt, and had their countenance; and the result was, that the Porte granted the required convention, of which the principal terms were—duration of convention fifty years; a station to be established at Chios, and another at Rhodes; 4500*l.* a-year to be paid to the Company for the use of one wire during four hours out of the twenty-four; no other telegraph line to be allowed to reach Egypt from Ottoman dominions in the Mediterranean; the telegraph to be subject to the police regulations of Turkey. The Porte hoped to increase its influence over Egypt by means of this connexion, and to raise the importance of Turkey, and the value of its inland telegraphs, by the transmission of Indian messages through its dominions.

The Emperor of the French, however, was also alive to these advantages, and through the Director-General of Telegraphs in France, proposed to the Company to get Candia substituted for Rhodes as a station, and to enter into working arrangements with a French Company that would lay a line from Toulon to the southern end of Corsica, thence to Malta, and thence to Candia, there to form a junction with the Dardanelles-Alexandria line. This proposal, though forming no portion of the plan of the Company, which was confined to the object of reaching India, was favourably entertained. Under these circumstances, the whole question was brought under the consideration of the Hon. East India Company, who, on the 1st of June, 1855, thus expressed themselves:—'In reply, the Court of Directors desire me to state that they would feel deeply interested in the success of so important an undertaking as that which you have submitted, as well as in its efficient operation, and on being assured of the completion of the line to Alexandria, would be ready to consider, in a liberal spirit, the propositions which the promoters of the Indian telegraph may offer for carrying out the work.'

Some six weeks after the receipt of this letter, the writer was despatched to Constantinople to obtain the firmans necessary for the extension of the line to India. A deputation of the directors, consisting of some of the most influential men

in commercial circles, waited upon the Secretary of the Treasury, to whom the whole question had been referred, to learn whether Government entertained the same views of the Indian line as the East India Company had expressed.

The Secretary of the Treasury strongly reprobated the line from Candia to Malta and Toulon, and expressed a belief that it did not emanate from the French Government, who, he said, would prefer an extension of the Algerian line from Cagliari to Malta, Corfu, and so on to Alexandria. As this was immaterial to the main object of the deputation, they expressed their willingness to adopt the last-mentioned system for their connexion with Europe.

It is to be observed, however, that the Algerian line traverses the Sardinian dominions, whilst the Toulon line would lie entirely in French territory after leaving Malta, which is the reason why the French Government prefer it. In the result, however, the deputation were given distinctly to understand that they must not look for any sort of countenance from the Treasury. This rebuff very much damped the hope of success in the minds of the directors; the deposits made by shareholders were returned in full, and the original promoters were left to prosecute the undertaking single-handed.

Lord Stratford de Redcliffe, however, continued to afford the writer a warm and generous support, and this continued even after Government had adopted the Euphrates line.

The principal points of discussion with the Porte were: whether the Company themselves were to be allowed to construct and own a line of telegraph across Egypt, and stations on the coasts of the Red Sea, for the use of the submarine line; or whether the Pasha of Egypt should construct and own the land line, and the Porte the submarine line and stations, each merely making use of the promoters to execute the work as contractors, and setting apart one or two wires for Indian messages, to be worked under the control of the Pasha and the Porte.

At that time the Turks had discovered that they could themselves construct and manage telegraphs. A line existed from Alexandria to Cairo, and Constantinople was connected with Adrianople, Varna, and Bucharest. The difficulty of obtaining permission for a foreign company to own and manage a telegraph on Ottoman territory was increased by the law which prohibited any Christian from owning land—a law only repealed last year.

It was urged upon the Turkish Government that the whole political value of the line would be gone if it were to remain under foreign control—that its success depended upon the support of the English Government, which would be withheld if ownership and independence of action were not secured to

the Company—that the line only traversed Egypt *in transitu* to its termini, and was elsewhere a submarine line, with but few stations on Ottoman territory, and established for foreign objects.

A vizieral letter, addressed to the Pasha of Egypt in the name of the Sultan, was at last granted upon the representation of Lord Stratford de Redcliffe, allowing the Pasha either to retain power to transmit our messages along his own lines, or to allow us to construct a line for ourselves. The question was thus at least left open to discussion. With this letter the writer proceeded to Egypt. The Hon. Frederick W. Bruce, our Consul-General there, completely entered into the importance of securing an independent line and independent action to the Company.

The Pasha, though at first inclined to adopt what he knew to be the real views of the Porte, and not to permit an English Company to own a telegraph through his territory, very soon understood the vital importance of the question to our communication with India, and with that liberality of spirit and largeness of view which so greatly distinguish him, granted the fullest powers of ownership and control. He remained satisfied with the importance which Egypt would acquire by having within her territory the key to the Indian telegraph, and gave up both the prospect of gain and the exercise of power. M. Ferdinand de Lesseps was put into communication with the writer by the Pasha, and used his great personal influence with him to grant the required privileges. The following are the principal conditions of the Egyptian Convention:—Term of ninety-nine years from opening of line; land for ninety-nine years for stations; any number of wires to be laid by the Company along the line of railway as far as Cairo and thence to Suez; the Pasha to protect the wires and stations; the appointment of all employés to be in the Company's hands; messages addressed to, or originally forwarded by, any person in Egypt, to be communicated through the medium of the Egyptian telegraph office; the official messages of all governments to have precedence over private messages, but to be upon an equal footing as between themselves; Egyptian official messages to be charged half of commercial messages; messages delivered in, or originally sent from, Egypt to pay a tax of five per cent. The Pasha to grant every facility for the landing of the submarine line from the Dardanelles to Egypt.

Thus 'through' messages are not taxed nor subject to any sort of control, and complete ownership and independence of action are secured to the Company over their line.

This convention also permitted the establishment of a station at Kossiir, a small town belonging to the Pasha, on

the Red Sea, about one-third of the way towards Aden. The control reserved over local messages was more especially pointed against the Dardanelles-Alexandrian line, which the Pasha feared would be used by the Porte for the purposes of political intrigue. It will, no doubt, afford a means of increasing the power of the Porte over Egypt.

It was intended to ask for a monopoly through Egypt, so as for fifty years to prevent any but an English line being established for the purpose of conveying Indian messages. The Foreign Office, however, having instructed Lord Stratford de Redcliffe and Mr. Bruce to oppose this, the proposal was never made. Four years were granted to construct the line down the Red Sea, during which period no permission can be granted to construct any other line for a similar purpose.

At the time there was considerable reason to fear that the French Government would attempt to push on their Algerian line through Egypt, so as to secure to France the transmission of Indian messages. The writer had the honour of several interviews with Lord Canning, then in Egypt, on his way to India. His lordship urged the great importance of establishing as few stations as possible on the coasts or islands of Arabia. The reason, no doubt, was the fear that the East India Company might at some time be called upon to protect them, and thus become involved in political difficulties with the Porte or the Arab tribes. A gun-boat, however, at the worst of times, would suffice to protect stations situated on the sea-shore.

The Egyptian railway, and the system of conveyance across the Desert to Suez, for the mails and Indian passengers, are entirely in the Pasha's hands, and are admirably administered, very little fault being found with the management. He has also constructed an electric telegraph from Alexandria to Suez, which at present transmits the Indian news.

The writer returned to Constantinople after a stay of three months in Egypt, for the purpose of getting the Egyptian Convention confirmed by the Sultan's firman, and obtaining a further convention from the Porte to enable stations to be established along the coasts of the Red Sea as far as Aden, beyond which the Turks do not exercise any jurisdiction, though possibly they may claim it. After some delay, the Sultan granted the firman, confirming the Egyptian Convention. It is dated the second decade of Ramazan, 1272.*

The only thing which remained to be done was to get the Porte to apply the important principles thus recognised and sanctioned by the Sultan's firman to the proposed stations in

* May, 1856.

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As to the principles of our rotation of cropping, the breed of cattle, and many other points of improved farming, we need expect—so far as at present, with diffidence, we would venture to predict—no great advantage, though certainly some, from their more universal application. But the facts that we have lagged behind our manufacturing brethren in enlightened energy, that they before us have applied all the aids of mechanical and chemical skill, and that the benefits of education in other branches besides the operation of the plough are now at length being seen, are those which give us the greatest hope when these are diffused more amongst our agriculturists.

If we have arrived at our present height without these advantages, why should we fear when we are now likely to enjoy their aids?

It is no small branch of education to know how correctly to conduct an *experimentum crucis*, or testing experiment, in any improved or debated point in agriculture. The man of science merely may err in trying many things before he hits on a useful one. The mere ploughman will scarcely have accuracy to conduct the simplest one, and will fail egregiously in any one dependent on chemical knowledge of the most elementary kind. Several instances of late years have shown how energy in this respect might be misdirected. To say nothing of the exploded idea, as it was first proposed, of *electro-culture*, and the theory of a French philosopher of supplying to the plant by steeping all that it would need, irrespective of the soil, some views that exposure to the air is sufficient, regardless almost of natural fertility, or the supply of constituents generally thought necessary, afford instances of unpractical flights and useless experimenting, which the man who joins '*practice with science*' had better avoid.

But when principles such as those of which we have enumerated a few have been fully tested, and when only a little more skill and experience are requisite to bring them into useful and general application, patient and skilful industry and intelligent practical knowledge are then of most avail. We have done much in agriculture—much still undoubtedly remains to be done. Looking at the rate of progress hitherto, and our increased advantages, let us go on

Ever reaping something new—
That which we have done but earnest of the things which we shall do.

A. S.

TELEGRAPHIC COMMUNICATION WITH INDIA.

RAILWAYS have superseded roads and canals for the conveyance of passengers and light goods—the electric telegraph has superseded railways in the conveyance of intelligence. The mechanical genius of this age has enabled man to apply to his purposes the power that pervades all space, and seems, by its wonderful properties of traversing inconceivable distances, and producing its effects in fractions of time that can hardly be calculated, rather to belong to infinity than to this world. Yet so it is; Providence has suffered this wonderful element to become the servant of mankind; and the 'dominion' given to Adam 'over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth,' seems, in these days, to be extended to that which especially appertains to regions beyond the earth. A mechanical contrivance, called the electric telegraph, produces, transmits, and registers, at the close of its career, the effects of the electric element. Those effects upon iron, or chemically prepared paper, constitute an alphabet; and the person who witnesses them, at the distance of hundreds and even thousands of miles from whence they proceeded, can, instantaneously afterwards, read the mind of the person who produced them. Such is the power that man now possesses to communicate with his fellow-man. This power has been extensively used in Europe and the United States for political, commercial, personal, and domestic purposes—not forgetting the daily use the press makes of it. As yet, however, the telegraph does not connect distant parts of the world. The different countries that it does connect are not very distant, and do not stand in the relation of countries which are inhabited by the same race, and which are bound together by ties of blood, of language, habits, tastes, and commerce. France is only just connected with Algeria — England with Malta and

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East India Company anxious for the purchase to be made, as they proved by immediately guaranteeing the Red Sea Telegraph Company 20,000*l.* a year for this express purpose. The assent, however, of the Board of Control was requisite to make this grant legal. The Board of Control repudiated the grant in a letter addressed to the Chairman of the Company. The recovery from the Euphrates delusion was not then so complete as it is now. This narrative, which is a true and complete history of the principal stages through which the question of telegraphic communication with India, whether by the Red Sea or by the Euphrates, has passed, will show the reader how these great questions rise, progress, and succeed or fall; what part private individuals take in them; how greatly their fortunes are influenced by the attitude of governments; and how much depends upon the state of public opinion.

In the present case, indeed, public opinion only began to show itself at all within the last few months; since when it has been against the Euphrates, and in favour of the Red Sea telegraph. Before that the matter was arranged between the promoters of the Euphrates line and the Treasury. The public only heard of the result. With respect to the probable results on our relations with India which will follow on the establishment of telegraphic communication, the subject is too uncertain and too wide to admit of more than a very general notice.

In a political point of view, it will vastly increase the power of the Home Government over the affairs of India. They will be informed of every event as soon as it occurs, and the same, or the next day, their advice or orders will be received in India.

In a commercial point of view, the prices of all articles of import and export will be daily telegraphed to each country. There will be less room for improper speculation, and greater certainty in all trade operations.

As regards China and Australia, the effect of this telegraph will also be great.

From Ceylon the Chinese news will be telegraphed to England. News intended for China will be telegraphed to Ceylon. The Australian news will be telegraphed from Aden, and that intended for Australia to the same place.

India is already covered with telegraphs, and all classes there are well trained to its use.

Nothing can now delay this great work, and the mechanical and scientific genius of this country will have effected a triumph worthy of its great fame in all that relates to the progress of the human race.

F. G.

PORSON.

IN a letter written by Brunck to Tyrwhitt on April 28, 1786, he speaks of England as 'le pays de l'Europe où la littérature Grecque est la plus florissante.' Whether that is the case at present may perhaps be doubted; but certainly, in the last two centuries, the actual amount of work done to advance the knowledge of the Greek language in this country would equal the whole of what has been accomplished in the rest of Europe. And of all the 'magnanimi heroes' * that have given up their lives to this literature, no one has effected so much in that especial branch of it to which he devoted himself, as the subject of the following memoir.

Of Porson there exist a variety of accounts in the different magazines and periodicals of the time of his death; they generally copy from one another, and are almost universally incorrect in respect of the dates of the events of his life. The late Mr. Edmund Henry Barker, of Thetford, had collected some materials for a biography of him; but the unsystematic nature and strange style of most of that gentleman's biographical attempts make us hardly regret that the design was not accomplished. Some of these materials, chiefly relating to the critic's early life, have fallen into the hands of the present writer, and, to a certain extent, have been found useful. They, however, have not much value, as Mr. Barker was in the habit of throwing together notes of every description, good, bad, and indifferent, apparently intending to print them all. In the present memoir, the writer can answer for the correctness of all the dates that are given. Uneventful as Porson's life was, and recently as he has passed away from us, it is curious to observe how difficult it is to ascertain these with positive certainty.

Richard Porson was born on Christmas-day, 1759, at East

* See Dr. Burney's *Tentamen de Metris Æschyli: Præf.*, p. 12.

Ruston, near North Walsham, in Norfolk, the eldest son of Mr. Huggin Porson, parish clerk of the place. His father was by trade a worsted weaver, and combined with this the offices of parish clerk, and Apparitor to the archdeacon. He is described as clever in his way, though seemingly not distinguished by any great superiority of intellect, and somewhat conceited in manner. Porson's mother was the daughter of a shoemaker named Palmer, of the neighbouring village of Bacton. She is said to have been a very shrewd and clever woman, lively and light-hearted, and, as has been so frequently the case, to her seems due the genius of all the family. She had considerable literary tastes, being familiar with Shakspeare and other standard English authors, much of which was owing to her having had the use of a library in a gentleman's house where she had gone into service. Besides the subject of our narrative, they had three other children who survived infancy, who all seem to have had a full share of the talents of the family. Henry, the second son, was born in 1761, and was first sent to Norwich, to a man who, by a curious coincidence, was called Pawson, to learn the duties of an exciseman. He then went to Debenham, in Suffolk; acted as an exciseman for less than twelve months; married the daughter of a farmer there; and then took a farm at Layerbritton, five miles from Colchester. It is stated of him, that the pecuniary affairs of the Corporation of Norwich having got into a state of confusion, it was proposed to send for him, as a person known to be so good an accountant, and possessed of so clear a head, as to be able to make out a satisfactory statement. The proposal was adopted; and Henry Porson was fetched for the purpose, and accomplished the task. He died of a decline in 1795. Thomas, the youngest son, was born in 1770, and became an usher at the schools of Fakenham and North Walsham in succession. He afterwards returned to Fakenham, married a native of the place, and set up a boarding-school. He is said to have been very popular both as a schoolmaster and in other respects at Fakenham, and to have been regarded as a prodigy of talent. A new house was built for him by one of the principal parishioners, who observed that the house which he then occupied was too small for his thriving school. He occupied it, however, for only half-a-year, and died in 1792 of a rapid decline. Their only sister, who was the youngest of the family, became the wife of Siday Hawes, Esq., brewer, of Coltishall, in Norfolk. In an article which appeared in the *Morning Chronicle*, on Porson's death, she is spoken of as a highly amiable and accomplished person. Mrs. Hawes expressed her wish that such flattery

had been suppressed, stating that, from her situation in early life, it was impossible that she should possess any accomplishments. 'I wish not to be brought before the public; my only ambition is, at the close of life, *to have deserved* the character of having been a good wife to my husband and a good mother to my children.' This, which is given by Mr. Beloe, in his *Sexagenarian*, besides displaying great modesty and good feeling, bears a remarkable resemblance to the sentiments of her brother, who, throughout life, detested few things more than direct flattery and praise.

Mrs. Porson, the mother, died in 1784, and the father in 1806.*

Porson's early life was very much what would be expected from the condition of his parents: he was put to the loom at once, and probably helped his mother in the corn-fields in harvest time. He was sent in due course to the village school at Happesburgh, a neighbouring village, kept by Mr. Summers, who seems to have been a very superior man—being a good Latin scholar, as well as possessing the ordinary acquirements of a village schoolmaster, for which he had been educated, owing to his left hand being paralysed. He became afterwards master of the grammar-school at Happesburgh, and died at an advanced age in 1831. When the father took Richard to Mr. Summers, he said—'I have brought my boy Richard to you, and just want him to make (*sic*) his own name, and then I shall take him into the loom.' He, however, took a good deal of pains with the boy, making him at night repeat the lessons he had learnt during the day, and thus, probably, laying the foundation of his unrivalled memory. Porson had previously been, for a short time before going to Mr. Summers, at a school in the neighbouring village of Bacton, kept by a Mr. John Woodrow. With Woodrow, however, he remained for only six weeks, being unable to bear the rough treatment of the boys. He seems to have been a sickly child, both his health and his temper having been altered for the worse by an attack of hooping-cough at the age of four; and was, from early youth, a very bad sleeper.

With Mr. Summers he remained three years, continuing to display remarkable aptitude for whatever was brought before his attention—especially arithmetic, of which he continued all

* For his father, Porson always retained the highest respect. On his wife's death he made a will bequeathing him a comfortable annuity; this will was destroyed on the old man's death. There is a letter in existence, written to his sister on the occasion of his marriage, expressing a strong anxiety that this step would not be disapproved of by his father.

his life very fond, and penmanship:—his skill in this last seems especially due to Mr. Summers. It is probable that there exist in several private hands some juvenile compositions in verse, which were written at this period of his life. The writer possesses a set of verses, 'On a Moonlight Night,' written when Porson was twelve, but by no means superior to the ordinary style of boys' exercises. Mr. Norris, his patron, however, wisely checked his poetical turn, telling him to write no more verses, as poets were always poor. Mr. Summers spoke, many years after Porson's death, of the boy's extraordinary memory; and stated that, in fifty years of scholastic life, he had never seen any boys so clever as the three brothers Porson. All the family were remarkable for memory, but by no means equal to Richard. He would frequently repeat a lesson without making a mistake, which he had learnt one or two years before, and had never seen in the interim. For books, he had only what his father's cottage supplied—a book or two of arithmetic, Greenwood's *England*, Jewell's *Apology*, and an odd volume of Chambers's *Cyclopædia*, picked up from a wrecked coaster, and eight or ten volumes of the *Universal Magazine*. And his love of calligraphy seems to have shown itself at a very early age, in practising on the margins of his father's books; though the story of his learning writing and his letters at the same time, by his father's tracing them on the ground with a stick, and making his son copy them, is probably apocryphal. To Mr. Summers, Porson was always very grateful, and visited him in later life, whenever he was in the neighbourhood; and the old gentleman, who lived to the age of eighty-two, retained to the last his enthusiasm for his pupil.

Even in so out-of-the-way and thinly-peopled a village as East Ruston, the remarkable aptitude of the boy became noticed; and when he was eleven years old, Mr. Hewitt,* the curate of East Ruston and two neighbouring villages, took charge of his education, having both Richard and his brother with him at his house at Bacton during the week, and sending them home for the Sunday. He continued thus till the age of thirteen, when his fame as a youthful prodigy came under the notice of Mr. Norris, of Witton Park (a place some four miles from East Ruston), the founder of the Norrisian Professorship at Cambridge. It was to Mr. Hewitt that Porson

* This Mr. Hewitt seems to have been a very remarkable man. He is said to have taught Mr. Summers all he knew; and with an income of 200*l.* a year he brought up five sons at the University, four of whom became fellows of their respective colleges; the fifth died an undergraduate.

owed this introduction: he took him to Mr. Norris, and begged him to examine into his acquirements and merits. Mr. Norris, seeing nothing in the personal appearance of the lad to indicate talent, said, 'Well, I see nothing particular in this heavy-looking boy, but I confide in your account of his talents.'

At the same time, however much disposed to interest himself in behalf of the youth, he was well aware how easily the partiality of his master might have overrated his pretensions to superior acquirements and promise; and thus determined on referring him to some person whose station and acquirements fitted him more especially for the task of inquiring into his powers. He sent Porson to a Mr. Carthew, a clergyman and magistrate of Woodbridge, in Suffolk, begging him to undertake the task of examining him; by Mr. Carthew, who felt himself reluctant to undertake this responsibility (he had been brought up and practised as a country solicitor before he took Holy Orders), he was referred to Lambert, then Greek Professor at Cambridge, who was requested to investigate thoroughly the boy's qualifications. He was accordingly sent at once to Cambridge, and examined by Lambert himself, Postlethwaite and Collier, the two tutors of Trinity College, and Atwood, then assistant tutor and looked upon as one of the first mathematicians in the University. It had been intended, if their report was favourable, that Porson should be sent to the Charterhouse on the foundation, if a nomination could be obtained. The examination was pretty strict; and all the examiners gave so favourable a report of the boy's knowledge and abilities, that Mr. Norris at once determined upon providing for his education, so as to fit him for the University; and it being found impossible to get him into the Charter-house, he was entered on the foundation of Eton in August, 1774.

A great deal of interest seems to have been raised about the lad at Cambridge. A letter from Mr. Hewitt, written on this occasion to Professor Lambert, gives an interesting account of his manners and studies. He speaks of having had 'the orderly and good boy' under his care for almost two years, during which time he had been chiefly employed on Corderius's Colloquies, Cæsar, Ovid, Horace, and Virgil, and Mathematics, 'in which science,' says Mr. Hewitt, 'Porson had made such proficiency before he came to me, as to be able to solve questions out of the *Ladies' Diary*, to the great astonishment of a very able mathematician in these parts.' In Greek he was only learning the verbs. His personal appearance at this time does not seem to have been prepossessing. Mr. Carthew, in a letter written also on this

occasion to Lambert, says, 'You will find the lad rather an unwinning cub than otherwise; but you will, I doubt not, make allowance for the awkwardness of his manners.'*

Of his Eton days Porson had not a very pleasant recollection. Mr. Maltby mentions that he declared he learnt nothing while there, and that the only things he recollected with pleasure were the rat hunts in the Long Chamber. The promise, too, that he had given of future excellence seems at this time rather to have gone off. His composition especially was weak, and his ignorance of quantity kept him far behind many of his inferiors.† He is described, too, as being prone to conceits in his verses, and to have been fond of mixing Greek with his Latin, as '*ingemuere πόθοι*,' &c.; and Dr. Goodall, in his evidence before the Committee of the House of Commons, spoke of his school exercises as being very inferior to more than one of his schoolfellows, and named the late Marquis Wellesley as infinitely his superior in composition. He went too late to Eton to have any chance of succeeding to a scholarship at King's. He was a popular boy among his schoolfellows, and two dramas which he wrote for performance in the Long Chamber are still remembered. One of these, called 'Out of the Frying Pan into the Fire,' is now in the library of Trinity College. He seems at first to have somewhat disappointed his friends, as Lord Nelson's brother, who was at Eton with him, brought back word that they thought nothing of the Norfolk boy. At the same time, his unrivalled memory was noticed at school, as the often repeated story of his construing Horace from memory, when his book had been abstracted, and an Ovid put into its place, testifies.‡ And his progress must have been somewhat remarkable, as, when he left Eton, contributions from Etonians to aid in the funds for

* The late Mr. Beloe, in his *Sexagenarian*, i. p. 212, mentions that Porson's family frequently spoke of this circumstance of his being sent to Cambridge, but treats it as a story not worthy of the least credit. Fortunately, Professor Lambert, who was still living when that amusing, though untrustworthy, work appeared, left a paper containing a full detail of all the circumstances, with the letters alluded to above, which is preserved in the library of Trinity College. It is hoped that these may see light on some future occasion. Lambert concludes: 'Porson returned home. But how long he remained under Mr. Hewitt's charge; by what means his patronage became afterwards so extensive; or in what manner he accumulated that stupendous mass of knowledge in a language of which, in the beginning of 1773, he was only studying the verbs, I cannot say."

† Some specimens of Porson's Eton Exercises are still in existence. Three were recently presented to the Library of Trinity College by T. L'Estrange Ewen, Esq., of Dedham, Essex.

‡ This story, which really belongs to Porson, has recently been given to the late Mr. Crosse, of *Acarus* notoriety, in whose life it appears.

his maintenance at the University were readily supplied. It was also during his Eton days that his mind received its first bias towards those pursuits in which he was afterwards to rise to the highest point, by the gift of a copy of Toup's *Longinus*, which Dr. Davies, then Head Master, gave him for a good exercise.

His satirical propensities seem to have been cultivated while a schoolboy. A story* is told of his administering a reproof to the late Mr. Simeon, who was contemporary at Eton with him, on his being something of a dandy in dress, by means of a copy of satirical verses, addressed to the 'ugliest boy in Dr. Davies' dominions.'

His patron, Mr. Norris, died in 1777, but he found another in Sir George Baker, the celebrated physician, who thus vicariously fulfilled his early promise of being a successor to Bentley, as had been prognosticated on his entering King's College on the day† of Bentley's funeral. Besides his heavy loss in the death of Mr. Norris, a worse misfortune befel him while a schoolboy—the formation of an imposthume in the lungs, which, though conquered at the time, made his health weak for life, and for a large portion of his days made him subject to asthma.

At Eton he remained some four years, and in October, 1778, through the aid of the same generous friend that had supplied the loss of Mr. Norris, he became a member of Trinity College, Cambridge,‡ then under the rule of Dr. Hinchliffe, Bishop of Peterborough, who for twenty years held both these important posts together. He seems to have thrown himself thoroughly into the studies and spirit of the place, being elected Scholar of the College in 1780, and Craven University Scholar in 1781. The next year (1782) he graduated as third senior optime, and obtained soon after the first Chancellor's medal; Sparke, afterwards Bishop of Ely, obtaining the second. And in the same year he was elected Fellow of Trinity, a very unusual thing at that time for a Junior Bachelor of Arts,—as Junior Bachelors, with the exception of three instances besides the present, were not allowed to be candidates for fellowships from the year 1667, when Isaac Newton was elected, till 1818, when Connop Thirlwall became a Fellow.§ There were six vacancies on the present occasion.

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* See Barker's *Parriana*, vol. ii. p. 700.

† See Monk's *Bentley*, ii., p. 413, note 40.

‡ He was admitted pensioner of Trinity College, March 28, 1778, under the tuition of Messrs. Collier and Atwood.

§ The three instances were those of Richard Bentley, son of the master, in 1723; Rogerson Cotter (afterwards M.P. for Charleville), in

He seems to have begun his critical career while an undergraduate, and it was doubtless during the period of his residence at Cambridge that his marvellous stores of learning were laid up for future use; and now that he had achieved his independence, and a position* which of all others gave him opportunity for pursuing the studies to which he had devoted himself, he turned his thoughts to publication. Accident seems rather to have led him to the tragedians, as at that time the knowledge of the Greek drama was at a very low ebb; if we except Markland's three plays of Euripides, and Musgrave's ponderous complete edition of the same author, scarcely anything had been done directly for them by an English editor since Stanley's time; and we believe that the first occasion on which Porson appeared in print was in a short critique on Schutz's *Æschylus*, in a review started by his friend Maty, a Fellow of Trinity, senior by a few years to Porson. This was written in 1783, while he was a middle Bachelor, and he continued to contribute to the review till its extinction some four years afterwards, writing in it reviews of Brunck's *Aristophanes*, Weston's *Hermesianax*, Huntingford's *Apology for the Monostrophics*, and other smaller contributions. The review of Brunck's *Aristophanes* is a striking specimen of that strong nervous English for which all Porson's writings are remarkable, and nowhere else are the chief excellencies and defects of the great comic poet so well summed up. But at this period of his life his chief attention was devoted to *Æschylus*. At that time the only editions of this poet accessible to students were the Glasgow reprint of Stanley's text, with Morell's school edition of the *Prometheus*, and one or two separate plays in Brunck's and Burton's Selections of Tragedies; and Stanley's edition having become very scarce, and he having left eight ponderous folios of MSS., with full materials for a second edition, the syndics of the Cambridge Press determined upon a new edition, of which Stanley's was to be the basis. Of course, the editorship was offered to Porson; but on finding that Stanley's corrupt text was to be followed, and all the trash that such worthless men as Pauw had written on the poet was to be incorporated in the edition, he declined to undertake it on such terms. He was very

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1771; and Thomas Robinson (Vicar of Leicester, author of *Female Scripture Characters*), in 1772.—See Monk's *Bentley*, ii., p. 248, note. Since 1818, the junior bachelors were occasionally suffered to be candidates, till 1830, when there were 10 vacancies, ever since which all bachelor scholars have been admitted to the examination.

* The only office Porson ever held in college was that of 'Sublector Secundus,' in 1784-5.

anxious to be sent to Florence to collate the Victorian or Medicean MS., without which no really satisfactory edition of Æschylus was possible; but one of the syndics, whose name it is a great pity has not been preserved, suggested that Mr. Porson might *collect* his MSS. at home.*

This completely put a stop to all hope of encouragement from a similar quarter, and the ties that bound him to Cambridge seem to have become weaker from this time. He had before this begun a correspondence with the veteran scholar of Leyden, David Ruhnken, then at the close of his life. He spoke of his intended edition of Æschylus, and requested to be favoured with any fragments that Ruhnken had come across in his collection of unedited Lexicons and Grammarians; and wishing to show Ruhnken that he had not undertaken a task for which he was unequal, he sent him, as a specimen of his powers in emendatory criticism, his restoration of two passages in Plutarch and Æschylus, by each other's help. As this is one of the earliest as well as one of the most brilliant of all Porson's emendations, we shall lay it before our readers.

The passage in Æschylus is thus read in Stanley's text (*Supplices*, 673-7):—

μηδέ τις ἀνδροκμὴς
λοιγός ἐπελθέτω,
τάνδε πόλιν δαΐξων,
ἄχορος κίθαρις
δακρυογόνον Ἄρη
βοάν τε δήμων ἔξω παίζων.

Towards the elucidation of this nonsense, Stanley had conjectured ἐξοπλίζων and Pauw, βοάν τ' ἔνδημον, in the last line; and Heath, ἀκίθαρις in the fourth. Now in Plutarch's *Erotic.* p. 758 F. (p. 1350 in H. Stephens's edition), is the following passage:—

ἡ δὲ ἀρειμάνιος αὕτη λεγομένη καὶ πολεμικὴ παντὶ δῆλον ὅτι τῷ θεῷ ἀνιέται καὶ βακχεύεται ἄχαριν ἀκίθαριν ἀκ . . . γονον ἀρ . . τατε δῆμον ἐξοπλίζουσαν.

Porson saw that there lay hid here a quotation from the *Supplices*,—filled up the blanks δακρυογόνον ἄρην βοάν τ' ἔνδημον, —and restored the passage of Æschylus by its help,—

ἄχορον ἀκίθαριν.†

* Kidd's *Tracts and Criticisms*, p. xxxvi. This is alluded to in a note to the *Letters to Travis*, p. 57.—'I have heard of a learned doctor in our University who confounded the *collection* with the *collation* of MSS.'

† The line of the *Supplices* is thus given in the Glasgow Æschylus. The reference to the passage of Plutarch will be found in the note on

If it be remembered that this was done by a young man of the age of twenty-three, it shows an amount of learning, mingled with the power of applying it, at that age, that it would be vain to seek elsewhere.

In 1786, on a new edition of Hutchinson's *Anabasis of Xenophon* being published, Porson was requested by the bookseller to communicate a few notes. These occupy pp. xli.—lix., together with the short preface headed, 'Lectori, si quis erit, S.' The notes signed W., which chiefly consist of citations from Suidas, are due to Mr. W. Whiter, Fellow of Clare Hall, and editor of the *Etymologicum*. These give the first specimen of that neat and terse style of Latin notes in which Porson was afterwards to appear without a rival. They also show already his intimate acquaintance with his two favourite authors, Plato and Athenæus, and a familiarity with Eustathius' Commentary on Homer. Traces, also, of his occupations at the time are seen in the references to the MS. Lexicon of Photius; and although the author's text is not in such a state as to give much scope for emendatory criticism, there are a few exceedingly neat and certain corrections. He gives, also, a specimen of his way of finding fault with other critics: thus—he is speaking of Heyne, whom he styles *Criticorum Deus*:—'sed aquila non captat muscas, et Critici majorum gentium adeo rebus intenti hærent aliquando, ut verba negligant.'

The next year were written (though they did not appear till 1790) the *Notæ breves ad Toupii Emendationes in Suidam*, prefixed to the Oxford reprint of Toup, which first made his name known, generally, as a critic of the highest rank. It is in his preface to these notes that he gives his reasons for—what has often been alleged as a charge against him—taking up the tone of severity rather than that more usual habit of over-praising other critics in his notes. He states, in case any should think that he has visited Toup with a greater share of blame than praise, that 'semper ab eorum consuetudine valde abhorrui, qui nihil aliud quam *pulchre, bene, recte*, tertio quoque verbo ingerunt;' adding, at the same time, that had not he the highest opinion of Toup's genius and learning, he never would have written anything at all upon him. In these notes a thorough acquaintance with the Scenic poets and their metres, at that time very rare, will be found; and though there is no hesitation as to finding fault when necessary, really good conjectures, by whomsoever made, are mentioned with

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Phœniss., 800. See Kidd, p. xxxvii., and the Appendix to the 52nd vol. of the *Monthly Review*, 1807, pp. 529, 530, an article written by the late Professor Dobree.

the honour due to them. And Porson writes now as one speaking with authority, and not as one who had his reputation to make. The style of these notes, as indeed is everything from his pen, is very amusing. Several curious instances of literary dishonesty are mentioned, of which the following, on the part of a Leipsic editor, is worth repeating, as unparalleled in impudence: Toup had used some very strong language against Ernesti, and on one occasion says of him, 'Miror hominis imperitiam. Sed hujusmodi Doctores exsibilandi, non refellendi sunt.' The Leipsic edition of Toup, in the place of this, reads, 'Miror hæc. Sed non refellenda sunt.'

During the same year (1787) that these notes were written, appeared what perhaps may be considered the most perfect specimen of Porson's wonderful power of humour—the three panegyrical letters, in the *Gentleman's Magazine*, on Hawkins's *Life of Johnson*.* Those who only know him by his critical works, or the fierce onslaught on the wretched defender of the Heavenly Witnesses, may perhaps be hardly prepared for the force of pleasantry, together with the delicate touches of satirical humour that abound throughout these wonderful compositions. They show, too—what we shall have more to speak of afterwards—Porson's extensive acquaintance with the English dramatists, especially with Shakspeare. Few have ever made so remarkable a use of quotations from Shakspeare as Porson has done here. Two extracts are given as specimens.† The first letter begins as follows:—

MR. URBAN,

Have you read that divine book, the *Life of Samuel Johnson, LL.D.*, by Sir John Hawkins, Knight? Have you done anything but read it since it was first published? For my own part, I scruple not to declare, that I could not rest till I had read it all through, notes, digression, index, and all; then I could not rest till I had gone over it a second time. I begin to think that increase of appetite grows by what it feeds on, for I have been reading it ever since. I am now in the midst of the sixteenth perusal, and I still discover new beauties. I can think of nothing else, I can talk of nothing else. In short, *my mind is become tumid, and longs to be delivered of those many and great conceptions* with which it has laboured since I have been through a course of this most perfect *exemplar* of biography. The compass of learning, the extent and accuracy of information, the judicious

* These will be found in Kidd's *Tracts and Criticisms of Porson*, pp. 333-352.

† The humour of these consists very much in the use that is made of Hawkins's absurd and bombastic language. The passages italicised are from Hawkins's book; the quotations from Shakspeare will be easily recognised.

criticisms, the moral reflections, the various opinions, legal and political, to say nothing of that excess of candour and charity that breathes throughout the work, make together such a collection of sweets that the sense aches at them. To crown all, *the language is refined to a degree of immaculate purity, and displays the whole force of turgid eloquence.* Johnson, to be sure, was thought for a while to have a knack at life-writing; but who, in his senses, would compare him to our Knight? . . .

Again, from the beginning of the third letter:—

MR. URBAN,

Two canons of criticism are undisputed: that an author cannot fail to use the best possible word on every occasion, and that a critic cannot chuse but know what that word is. And if these rules hold good in words, why not in sentences? These points being granted, it follows, that whenever Sir John Hawkins, in quoting any part of Johnson's works, adopts a reading different from that of the edition, it is to be replaced in the text, and the other discarded. Now to apply. . . . . In the last number of the Rambler, Johnson says, or is made to say, 'I have endeavoured to refine our language to *grammatical purity.*' How tame, dull, flat, lifeless, insipid, prosaic, &c., is this, compared to what the Knight has substituted—*grammar and purity!* a fine instance of the figure *Hen dia duoin!* like Virgil's *pateris et auro;* or like. . . . In the same Rambler, Johnson says, 'On this part of my work I look back with pleasure, which no blame or praise of man shall diminish or augment.' Here the Knight has excelled himself. He has made an emendation hardly inferior to some of Warburton's upon Shakspeare; and, by throwing out two idle words, has restored the sentence to its original vigour—'no praise of man shall diminish or augment.' From this passage, thus corrected, we learn that praise, when bestowed by some people, is a disgrace; a truth which the world never thoroughly perceived before some executors of their friend's fame appeared. . . . .

The whole is an admirable specimen of Porson's peculiar view of ironical humour.

It was in the course of the next years, 1788 and 1789, that the letters in the *Gentleman's Magazine,* on the subject of the Three Heavenly Witnesses, which, enlarged and re-written, afterwards formed the volume of the *Letters to Travis,* appeared. A brief sketch of the controversy may not be unacceptable to our readers.

With hardly an exception, every person worthy of the name of a critic, from Erasmus to Newton and Bentley, who had examined the question, had decided on the spuriousness of the 7th verse in the 5th chapter of St John's 1st Epistle; and even such *critici minorum gentium* as Bengelius and Mill, who, after giving every conceivable amount of evidence against the

genuineness of the verse, decide in its favour, are obliged to resort to such absurd theories as that it was withdrawn from the books by the *disciplina arcani* of the Church, till it was gradually lost, or else content themselves with rhapsodies on the innate beauty of the passage.* And thus Gibbon, having occasion to speak of the verse, says,—'The three witnesses have been established in our Greek Testaments by the prudence of Erasmus; the honest bigotry of the Complutensiam editors; the typographical fraud or error of Robert Stephens in the placing a crotchet, and the deliberate falsehood† or strange misapprehension of Theodore Beza.' And probably, as Porson remarks, although the historian must have foreseen many attacks upon other parts of his work, he apprehended none on this passage. In this, however, he was disappointed. Mr. Archdeacon Travis, a person, according to Dr. Turton, utterly unqualified for critical inquiries, though he considers him to have been a man of some talent and attainments,‡ determined to win a transient popularity by a defence of the spurious verse. And the infidel opinions which characterised the Decline and Fall, made the public receive with eagerness anything in the shape of argument on the other side. Thus, the letters inserted first in the *Gentleman's Magazine*, and afterwards collected into a thick octavo, were widely read, and sprung at once into popularity, going through several editions in the course of a short space of time. And thus this worthless book, conspicuous for the most disgraceful ignorance and blunders which the veriest tyro in theology could have hardly committed, coupled with glaring bad faith and shameless accusations of many of the greatest men of past times (*e.g.*, St. Jerome,

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* See a wondrous specimen of one Kettner in Porson's preface, p. iv. I have not forgotten that Bishop Pearson quotes the verse as if it were genuine. But the less said about his conduct on this occasion the better. It 'undoubtedly protected him from temporary obloquy; but it does no credit to his memory.'—*Quarterly Review*, vol. xxxiii. p. 95, an article written, I believe, by the present Bishop of Ely. It is with great concern that I find Dr. Pusey quoting the words 'on earth' as genuine, in his *Letter to the Bishop of London* (1851), 1st edition, p. 164. But we must not be the slaves of great names.

† I merely give this passage as Gibbon wrote it; but the expression 'deliberate falsehood' applied to Theodore Beza is one which could be amply justified. Some very discreditable instances of bad faith on his part are given by the late Professor Blunt, in his admirable work on the *Duties of the Parish Priest*, pp. 57-60, in the shape of mistranslations of the New Testament, where our translators have been partially misled by him. See also another equally disgraceful instance given by Mr. Porson—*Letters to Travis*, p. 85.

‡ A few choice specimens, amply justifying what is said above, will be found in Dr. Turton's *Vindication of Porson* (1827), p. 340.

Erasmus, Sir I. Newton, &c.), at the same time that its author had the impudence to say, that 'Truth was the sole aim, object, and end of his letters,' was conceived to have reopened a question considered long ago settled, and to have dealt a heavy blow at the reputation of the infidel historian.* Such conduct as this was what most offended and roused the deep love of truth, and contempt for sciolism and pretence, that characterised Porson. And though, as he says himself, 'his natural indolence, his engagement in other studies, his contempt for the work,' for some time hindered him from coming forward, the ignorance and insolence of one of Mr. Travis's *fautores*, in 'challenging Mr. Gibbon to come forth in person and break a lance with that valiant knight of the holy brotherhood,' roused him to show how enormous Mr. Travis's demerits were. And at length, in 1790, the collected volume of *Letters to Travis* appeared.

A detailed criticism of the work would carry us far beyond our limits. It may be briefly described in the words of Gibbon, as 'the most acute and accurate piece of criticism which had appeared since the days of Bentley.' One is at a loss which to admire most—the thorough grasp of the subject in all its bearings, the amount of miscellaneous learning displayed in every page, or the humour which pervades the whole. Travis, certainly, has no mercy dealt to him, but probably not Mr. Boyle himself deserved so rigorous a chastisement. It has certainly set the question completely at rest,† and it is not too much to say that such a body of evidence against the verse is collected, that the genuineness of no passage of Scripture rests on a firmer basis than does the spuriousness of this. The line of argument taken up by the few defenders the verse has found, has been as foolish as it is dishonest, and they have usually written as if the doctrine supported by it would be imperilled by its loss. The true spirit in which to engage in the controversy, is best given in the noble words of Bentley—'If the fourth century knew that text, let it come in, in God's name: but if that age did not know it, then Arianism in its height was beat down without the help of that verse—and let the *fact* prove as it will, the *doctrine* is unshaken.'‡

* Travis was a Cambridge man, of St. John's College, and strange to say, was senior medallist in 1765. An excellent criticism on the general style of the letters to Gibbon will be found in Dr. Turton's *Vindication of Porson*, pp. 335 seqq.

† The late Bishop Burgess's fresh attempts to revive the controversy are only remarkable as having been the occasion of Bishop Turton's noble and crushing answer.

‡ Bentley's *Correspondence*, ii., p. 530.

The book, however, had by no means a large circulation—certainly very inferior to Mr. Travis's. Porson received but 30*l.* for it, and the bookseller is even said to have been the loser by the transaction—so careless or wilful is the world about truth, especially if that truth chance to be unpopular. 'It is much easier,' to use Porson's own words, in the work before us, p. 338, 'to go on believing everything that we hear or read, than to undergo the labour of inquiry, or the pain of suspense.' But it produced worse consequences to its author. After quoting a reviewer of Bengelius, who says that he is one of those 'who, under pretext of defending the Three Heavenly Witnesses with moderation, defend them so gently that a suspicious reader might doubt whether they defended them in earnest: *though God forbid that we should wish to insinuate any suspicion of Mr. Bengelius's orthodoxy;*'—Porson says, 'You see, sir, what a mistake I have made in taking my side of the question. But there is no help; it is too late to recant. *Fortem hoc animum tolerare jubebo, et quondam majora tuli.*' And he was not mistaken in this view. There seems to have been a considerable prejudice excited against him in consequence of the book. Mr. Kidd, p. liii., tells a story (rather obscurely and incomprehensibly) of some one who intimated 'the great danger of encouraging a scholar who read Greek in Mr. Porson's method.' And an old lady,* Mrs. Turner, of Norwich, who had been exceedingly fond of Porson as a child, and had left him a legacy of 300*l.*, cut it down to 30*l.* on being told by some scoundrel that he had written a book against Christianity, *i.e.*, the *Letters to Travis!* But even then, with all whose opinions were really worth anything, and ever since, it has placed him in the highest rank of literary fame. With regard to his own opinions on the doctrine in question, we shall have more to say in discussing his theological opinions generally. He said to a friend, on being asked what he thought of the evidence afforded by the New Testament in favour of Socinian doctrines, 'If the New Testament is to determine the question, and words have any meaning, the Socinians are wrong.'† Moreover, in reading the book before us, it must be recollected that Porson throws himself entirely on what he calls the unorthodox side, defining, by the orthodox opinion, 'that opinion which, whether true or false, prevails in the

* She seems to have been a very foolish person. She doated on Porson as a child to such a degree that she asked Mr. Hewitt, Porson's early preceptor, if he did not like Porson better than his own children! Her executor, Mr. Ewing, was also executor to Mr. Norris.

† *Quarterly Review*, vol. xxxiii. p. 99.

time and country of the transcribers or editors.'—p. 315, note. And in his preface, he says, in a passage which may be taken as a very fair example of his style:

> If any expressions occur where I seem to speak slightingly of orthodoxy, let the reader consider that in disputing against a passage generally supposed to favour the cause of orthodoxy, my subject sometimes compelled me to assume the person of a heretic. But when, for the sake of brevity, I use the word *orthodoxy* in a bad sense, I mean not that respectable orthodoxy which defends the doctrine of the Trinity with fair argument and genuine Scripture, but that spurious orthodoxy which is the overflowing of zeal without knowledge—which is not contented with our professing the common faith, but would force us to defend it by all and singular the arguments, whether weak or strong, and all the texts, whether spurious or genuine, that have ever been employed in its defence;—which, whenever a rotten and ruinous outwork of religion is demolished, utters as hideous a shriek as if the very foundations of the building were shaken, and the church of Christ nodded to her fall.

With regard to the levity which characterises the book, we must remember the tone of things at the time Porson wrote—in these days he would have written very differently; but he, to a certain extent, forestalls such objections in his preface, when he states that he could treat the subject in no other manner if he treated it at all. 'To peruse such a mass of falsehood and sophistry, and to write remarks upon it, without sometimes giving way to laughter, and sometimes to indignation, was, to me at least, impossible.'

Still, in treating on such a subject, the tone of levity *is* grating to our feelings, and we would gladly sacrifice all the humour and pleasantry with which the book abounds to escape even the slightest shock to our feelings of reverence and awe.

One other caution is necessary to any one not familiar with Porson's style; his fondness for quotation, and the quiet vein of irony that runs through all his writings, have sometimes misled his readers.* There is scarcely a page in the volume without a reference, either open or concealed, to Shakspeare or some of the other English standard authors—assuming, as he always did, his readers to be as familiar with them as he was himself. As an example of his irony, we may instance the passage in p. 378—

* As a slight instance of this, in his review of Brunck's *Aristophanes* he says, speaking of a line in the *Equites*, 'Whoever has a mind to see what the critics have written about it and about it,' referring to the line in the *Dunciad* in Bentley's speech, 'And write about it, goddess, and about it.' When this article was reprinted in the *Museum Criticum*, vol. ii. p. 119, the words 'and about it,' were struck out as a misprint.

'But the strongest proof that this verse is spurious, may be drawn from the Epistle of Leo the Great to Flavianus upon the Incarnation,' which presents a very amusing (though I am afraid we must say somewhat profane) account of the story in question, which Bishop Burgess assumed to have been written in sober seriousness. Again, in page 353, where he is instancing some passages in the New Testament, where in a few MSS., *lectiones* (to use Griesbach's language), *quæ orthodoxorum dogmatibus manifeste præ ceteris faciunt*, have been introduced, he says, 'There are several other places in the New Testament where the reading has been hitherto shamefully neglected.' Again in p. 223, 'Having been always extremely fond of Gregory,' and p. 272, 'My favourite Gregory,' the allusion to 'Hæc ex Gregorio illo Nazianzeno' is obvious, Mr. Kidd says, to every resident member of *our* university. Most likely also in p. 270, where he is also speaking of Gregory Nazianzen, the words 'the singular fitness of the passage for his purpose,' contain an allusion to the same story.* From this, a Mr. H. A. Mathew,† in the *Classical Journal*, vol. viii. p. 368, in a paper recommending the study of the Fathers, uses as one of his arguments that 'the immortal Porson declares (quoting the above passage) that Gregory was his favourite.' It is somewhat remarkable that even Dr. Turton should have been misled by this—*Vindication*, p. 45—as he was very familiar with Porson's ironical style, and mentions that 'An amusing essay might be written on the mistakes which have arisen from interpreting in sober seriousness expressions which Porson meant to be understood as solemn irony.'—p. 202.

During the years that followed, Porson continued to be a contributor to the leading reviews. After his friend Maty's review had ceased, he occasionally wrote an article for the *Monthly*, and possibly the *Analytical* and *Critical Reviews*. In the former, the articles on Robertson's *Parian Chronicle*, Edwards's *Plutarch*, and Payne Knight's *Essay on the*

* Although this story is tolerably well known, it will bear repetition. Bishop Watson one day before presiding at an act, as Regius Professor of Divinity, in the schools, was overtaken by a friend out riding, who mentioned that there was a passage in Gregory Nazianzen of singular fitness for the morrow's disputation. 'Is there?' said Watson, 'I never read a word of him.' 'Never mind,' the other replied, 'I will send you my copy, with the leaf turned down at the passage.' The next day the Professor came out glibly with the extract, ending it with 'Hæc ex Gregorio illo Nazianzeno, quem semper in deliciis habui.'

† This was a young man of considerable promise, who died early. Some other papers by him will be found in the earlier volumes of that strange farrago, the *Classical Journal*.

Greek Alphabet, are his. These have been reprinted in Kidd's collection. Later in life several articles bear traces of his assistance, though not entirely from his pen—*e. g.*, the articles on Wakefield's *Lucretius*, and on Kipling's (so called) fac-simile of the *Codex Bezæ*,* in the *British Critic*, and that on Walpole's *Scarce Translations* in the *Critical Review*. The last is said to have proceeded from a conversation the editor had about the book with Porson; but there are blunders that evidently show a very different hand. The only review with which we are acquainted on any besides his own peculiar subjects is a review of C. S. Pybus's poem, '*The Sovereign*,' in the *Monthly Review*, which has been recently reprinted in the late Mr. Barker's *Literary Anecdotes*, vol. ii. p. 159. But Beloe, who certainly knew Porson well, and, as one of the first editors of the *British Critic*, was likely to have good information on the point, says that the world never knew half that Porson put in print. It has been suspected† that the germ of the famous articles in the *Monthly Review*, by which Burney obtained his celebrity as a Greek scholar, was in reality due to Porson. Certainly in any of the works that bear his name, Burney has done nothing at all comparable to these articles; the *Tentamen de metris Æschyli* is very unlike what should have proceeded from the reviewer of Wakefield's *Dia-*

* Porson was much opposed to this useless and expensive plan of publishing manuscripts with types made to imitate the characters, which, of course, can never constitute a real fac-simile. He states his belief, that 'all the ends of the publication of the manuscript would be as well answered by printing the text in common capitals, and giving only a fac-simile of the most remarkable or difficult passages.'—*Gentleman's Magazine*, October, 1788, p. 875. His opinion of the editor of the *Codex Bezæ*, is given as a specimen of his most powerful vein of irony:—'I must own that if I could perceive the use of such a work, I should readily grant that the University has pitched upon the fittest person in the world to be the editor. Dr. Kipling (quem honoris causa nomino) is, without any question, furnished with every accomplishment necessary to get honour for the University, and money for himself. He has, from his earliest youth, applied himself diligently to all sorts of critical learning, but most diligently to sacred criticism, and from a long acquaintance with manuscripts, aided by natural sagacity, is become such an adept in Greek palæography as few know, and few would believe. It does not come within the plan of my present letter to say anything of his professorial and oratorical talents; but I may venture to affirm without flattery (for I abhor it), that I never yet heard Dr. Kipling in the schools or the senate house, that I had not the most lively remembrance of his principal, Dr. Watson.'—*Ibid.* The last sentence alludes to Dr. Kipling's being Dr. Watson's deputy as Regius Professor of Divinity, a post for which he was eminently unfit.

† We owe the first hint of this to Mr. George Burges. See Barker's *Literary Anecdotes*, ii. p. 5; Dyce's *Porsoniana*, p. 315.

tribe and Glasse's *Samson Agonistes:* and as to his talents as an editor, a worse specimen than the sumptuous volume of *Bentleii Epistolæ* can hardly be found—as any one may see who will take the trouble to compare it with Dr. Wordsworth's complete edition of the *Bentley Correspondence*—not that this last is as carefully edited as it might have been, as a comparison of many of the letters with the originals will show. Nor is Burney the only scholar who has risen to fame through Porson's help. If any one will take the trouble to compare some of the emendations on *Athenæus*,* given in Elmsley's article in the fifth number of the *Edinburgh Review*, with the notes on those passages in the *Adversaria*, he cannot fail to be struck with the remarkable coincidences between the reviewer and the critic; and it is said that the reason why Elmsley's *Acharnenses* was suppressed by the editor was in consequence of a not very creditable circumstance on his part. The story will be found at full length in the *Church of England Quarterly Review*, vol. v., pp. 413-414.

But respecting Porson's contributions to periodical literature, we shall have more to say when we come to speak of his connexion with the *Morning Chronicle*.

We come now to a critical period in Porson's life. By the statutes of Trinity College, all Fellows, with two exceptions, are required to be in Priest's orders within seven years of their Master's degree; and, in the year 1792, Porson had to decide upon his course. It is difficult for us, at the present day, to estimate the struggle before him then: *now*, the case of a person taking Holy Orders merely to keep a Fellowship, while he feels himself unfit for the duties which he undertakes, or has a difficulty about the creeds he has to subscribe and inculcate, is, to say the least, very rare; and if any one resigns his emoluments in this way, he is only supposed to show common honesty and straightforwardness. But it was a different thing in the dark times of which we are writing—a very different tone then prevailed in the country generally, and the universities in particular. If we recollect what was the character of some of the most prominent persons in the University, what want of principle there was in the highest places, and what also was the tone and character of many of those who were most

* 'Many persons will recollect the indignation felt and expressed by him (Porson) a few years ago, at seeing some restorations of different fragments in *Athenæus*, which had been communicated by him to a friend, published in a review without the slightest acknowledgment or allusion to their real author.' (Bishop Monk, I believe, in the) *Quarterly Review*, vol. v. p. 207. See also Dobree's *Adversaria*, t. ii. p. 22, where an extremely strong expression is used.

prominent among the clergy—the refusal to which he made up his mind, to decline to take Orders, will give evidence of an honesty and a truthfulness of no ordinary kind. At that time, of the duties and responsibilities of the clerical function very little account was made; and they were entered upon by many whose lives and hearts were equally alien from the spirit of religion—indeed, even from what the world expects in externals from those who devote themselves, if only in name, to the Christian ministry. And as to doctrine, a sort of modified Socinianism was the creed of a large portion of even the most respectable part of the University clergy.

But Porson was not the man to subscribe to doctrines that he did not believe, or to undertake duties for which he felt himself to be unfit;* and thus when the choice had to be made between independence and a comfortable income, with sacrifice of conscience on the one hand, and penury, with the preservation of honesty,—on the other, after having fairly considered the subject in all its bearings, he saw what his course must be, and resigned his Fellowship, without having anything in the world to look forward to for his support. What made the case peculiarly trying was, that the means open to the College for keeping him still one of its body, offered themselves, by the vacancy of one of the two Lay Fellowships at the time, to which he naturally thought himself entitled. But this, although it had been promised to Porson, was given to another;† and he was coldly and unfeelingly recommended to take Orders. The interview that he had with the Master (Dr. Postlethwaite) was a very curious one, and to it Porson frequently referred in after life. A partial account will be found in Mr. Dyce's *Porsoniana*, p. 308,‡ given on the authority of the late Mr. Maltby. It took place at Dr. Vincent's house, the deanery at Westminster, where Dr. Postlethwaite had gone to examine for the Westminster scholarships. Postlethwaite trembled very much—could hardly stand, and supported himself by the pillar near him. Porson said afterwards, that not for all the Indies would he have the feelings that then agitated the

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* 'I found that I should require *about fifty years' reading* to make myself thoroughly acquainted with divinity—to satisfy my mind on all points—and therefore I gaveit up. There are Fellows who go into a pulpit, assuming everything, and knowing nothing; but *I* would not do so.'—Porson according to Mr. Maltby; Dyce's *Porsoniana*, p. 305.

† John Heys, a young man just of M.A. standing, a relative of the Master.

‡ The words put into Porson's mouth, 'I am come, sir, to inform you that my Fellowship will become vacant in a few weeks, *in order that you may appoint my successor*,' can hardly be correct.

Doctor's frame.* He repeated afterwards to Mr. Kidd, in speaking of the circumstances, the seventh chapter of Job. A touching account, too, of his feelings at this time is given by Mr. Beloe, in his *Sexagenarian*, who says (vol. i., p. 215), 'the anguish he expressed at the gloom of his prospects, without a sixpence in the world, his grief, and finally his tears, excited an impression of sympathy which could never be forgotten.' However, this downheartedness did not last long; and Mr. Kidd describes him soon after as observing, with his usual good humour, that he was a gentleman living in London, without a sixpence in his pocket. But there is no doubt that the treatment he received at this time, and his disappointment, permanently affected his spirits, and gave a saturnine turn to his mind. He is said, at this time of his life, to have lived for three weeks on a single guinea.

As to what his theological opinions really were, it is very difficult to say. On religious points, excepting in a critical point of view, he was always very unwilling to speak. Many of his friends had certainly a tendency to Socinian doctrines; and his refusal to subscribe, together with the decided bias which (with all due allowances for his necessarily taking up the side which has foolishly been supposed to favour Socinianism) certainly appears to exist towards this quarter in the *Letters to Travis*, would incline us to think that his own real opinions led thither. Yet we have seen (above, p. 139) that this was really not the case. And to class him as an unbeliever would be shamefully untrue. Mr. Kidd speaks of the horror with which he received the charge of being a suspected unbeliever, and has brought together several passages from his works, which would not have been written by such a lover of truth as Porson was, had he really been an infidel.

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* This account is taken from Mr. Barker's manuscripts. A description of this interview, as given by Porson himself to the late Mr. Smart Hughes, in a letter written by the latter to Mr. Upcott, is now in the writer's possession. It has been printed in a recent number of *Notes and Queries*, by Mr. Thompson Cooper. I learn from Mr. Cooper, that Mr. Hughes's private tutor, at whose rooms the occurrence took place, was the Rev. J. D. Hustler, formerly fellow and tutor of Trinity College. Porson is described as saying that he used at that time frequently 'to lie awake through the whole night, and wish for a large pearl.'

Whatever may be said of Postlethwaite's conduct on this occasion, it should be remembered that hardly any master of Trinity College has done so much for its welfare. He established the present system of Fellowship Examinations, and also the 'May' Examinations for all the under-graduates, which last have had no small influence on the education of the country.

Outwardly, too, he observed the usual forms of religion; in his later years, when with his relations in Norfolk, he was regular in his attendance at church,* and once, certainly,† received the Sacrament. Again, in speaking of the interpolated passage of St. Augustine, quoted in the Twenty-ninth Article (*Letters to Travis*, p. 229), he speaks of it as any member of the Church of England naturally would. Nor was he ever heard to say a word against the Established Church, or against those who differed from himself. That he was 'truly and actively pious,' perhaps is not exactly correct;‡ and as to how far the remarkable passage from Diodorus Siculus I., 2. p. 5, quoted in his Appendix to *Toup*, p. 448, expresses his real sentiments (see Barker's *Literary Anecdotes*, ii., p. 187), we shall leave to our readers. During his father's last illness, when he visited Coltishall, the Christian tone of feeling and sentiment was everything that could have been desired. And Mr. Kidd mentions his speaking of his birthday (Christmas-day) with triumph and thankfulness. The only conceivable ground for any suspicion of his being an unbeliever rests on certain papers in one of the newspapers, of which we shall speak hereafter.

In politics, there is no doubt that he held opinions opposed to what was in fashion in his own day. Mr. Maltby mentions that he would think nothing of toasting Jack Cade at a tavern, at times when such opinions would very easily bring people into trouble. It is amusing to find allusions in his quiet way, while commenting on classical authors, to his own times: thus, in his sketch of Aristophanes' character (*Kidd*, p. 15), where he is speaking of the poet's 'detestation of the expensive and ruinous war in which Greece was engaged,' it is easy to see that the critic is thinking of the American war, which had just (1783) been brought to a conclusion. So, later, in one of his letters about Sir John Hawkins—'Our present excellent Laureate [Warton] informed his Majesty

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* On one occasion Dr. Grape, the rector of Horstead and Coltishall, when Porson was in church, quoted in his sermon the Greek verse, Titus i. 12.

Κρῆτες ἀεὶ ψεῦσται, κακὰ θηρία, γαστέρες ἀργαί.

Porson is described as having been much amused by this strange compliment to him.

† Beloe's *Sexagenarian*, i. p. 220.

‡ 'He was truly and actively pious; but it was of an order that admitted not of shackles.' Dr. Aikin's *Athenæum*, vol. iv. p. 429. This article is stated to have been taken from the *Morning Chronicle*, and was most probably written by Perry himself. The memoir that follows in the *Athenæum*, signed Hellenophilus, I believe is due to Bishop Maltby.

that there was no true glory in the American war (which I fully believe).'

On another occasion he says :—

In these ticklish times, when to look or think awry is an unpardonable crime, which can be expiated only by fine, banishment, or durance, we are not yet, I trust, prohibited from the discussion of philological questions. Talk of religion, it is odds but you have infidel, blasphemer, atheist, or schismatic, thundered in your ears; touch upon politics, you will be in luck if you are only charged with a *tendency to treason*. . . . . Nor is the innocence of your intention any safeguard. It is not the publication that shews the character of the author, *but the character of the author that shews the tendency of the publication.**

At this time† a subscription was got up among Porson's friends, to provide an annuity to keep him, at least, from want. Mr. Cracherode, Mr. Cleaver Banks, Dr. Burney, and Dr. Parr took the lead, and a sufficient sum was collected to enable him to live in tolerable comfort, and pursue his favourite studies, in London. We have seen the sum collected stated as amounting to about 100*l.* a year, which is probably not very far from the truth:‡ he refused to accept it, except on the condition that he should receive only the interest during his lifetime, and that the principal, placed in the hands of trustees, should be returned to the donors on his death. These donors, such as were living, or their survivors, refused to take the money, and the Porson Prize at Cambridge was founded with this sum to perpetuate his name.

After the loss of his Fellowship,§ he continued chiefly to

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* When asked to subscribe to Pitt's statue, and shown a handsome list of subscriptions, he said, 'I was thinking the other day I ought to subscribe; but on going to my desk, found that my money was all gone to the income-tax.'

† It is said that Tyrwhitt had promised to provide for him; but he died suddenly, and thus no provision for Porson was forthcoming from this source.

‡ 'When the sums verge upon 2,000*l.* we shall stop.'—J. C. Banks, in a letter to Parr.—Johnstone's *Life of Parr*, i. p. 381.

§ It is interesting to observe, that to one of the vacancies on this occasion *John Tweddell* succeeded; and to any one who knows how the elections are at present conducted, the following extract from a letter from Tweddell to Parr will be read with interest:—'I have the pleasure to acquaint you, that I am made one of the people called Fellows. This is very odd; for after the villainous election of last year, I thought I had been deemed too reprobate to become one of so immaculate a society. An odder thing still is, that all parties are satisfied with the five men that are elected, as well ins as outs. But the oddest thing of all, and that is a very odd thing indeed, is, that I believe all parties *ought* to be satisfied. It is a just election altogether.' —Johnstone's *Life of Parr*, i. pp. 387, 8.

reside in London—having chambers in Essex-court, Temple—though occasionally visiting friends at a distance, among whom Drs. Goodall and Parr were perhaps the chief. It was at the former's house, at Eton, that the letters to Travis were written, and at one time of his life he spent a great deal of his time with the latter at Hatton. While there he would generally spend his mornings in the library, and for the most part in silence; but in the evenings, especially if Parr was away, he would collect the young men of the house about him, and pour forth from the rich stores of his memory torrents of every kind of literature—'pages of Barrow—whole letters of Richardson—whole scenes of Foote—favourite pieces from the periodical press.'* The charms of his society are described as being then irresistible. 'Nothing could be more gratifying,' says one of his friends, 'than a *tête-à-tête* with him; his recitations from Shakespeare, and his ingenious etymologies and dissertations on the roots of the English language, were a high treat. It was quite extraordinary how he would trace a word from its origin to its common acceptance.' And though towards the last few months of his life his memory was slightly impaired, this wonderful power of retaining accurately what he had read, and being able to produce it always when called for, never forsook him. A curious instance is given by Mr. P. L. Gordon (*Personal Memoirs*, vol. i. p. 266) of his giving to a company assembled in his house a translation from memory of an Italian novel he had sat up all night to read—'Although there were above *forty* names introduced into the story, he had only forgotten *one*.' This annoyed him so much that he started from the table, and, after pacing about the room for ten minutes, he stopped short, exclaiming, 'Eureka! the Count's name is Don Francesco Averani.' 'Nothing,' says Stephen Weston,† 'came amiss to his memory—he would set a child right in his twopenny fable-book, repeat the whole of the moral tale of the Dean of Badajos, or a page of Athenæus on cups, or Eustathius on Homer.' An anecdote is told of his repeating the *Rape of the Lock*, making observations as he went on, and noting the various readings: of which one of the company said, 'Had it been taken down from his mouth and published, it would have made the best edition of that poem yet in existence.'—Barker's *Parriana*, i., p. 553.‡

It is at this time that some remarks upon his habits of life

* Johnstone's *Life of Parr*, i. p. 380.

† *Porsoniana*, or, Τεμάχη τῶν Πόρσωνος μεγάλων δείπνων, (a pamphlet very and deservedly scarce,) p. viii.

‡ Mr. Rogers, Dyce's *Table Talk*, p. 218, mentions his entertaining a large party at William Spencer's, by reciting an immense quantity of forgotten Vauxhall songs. But anecdotes of his wonderful memory abound.

seem called for; and, without raking together all the foolish stories told to his discredit, most of which are exaggerated, and many absolutely false, I fear we must not shrink from stating that he was addicted in no trifling way to the vice of drinking, to such an extent as considerably to impair his usefulness, and which, no doubt, contributed to shorten his life. And with all the allowances that ought to be made for one living in such times as the close of the last century, I fear that Porson in this respect exceeded what was even then considered tolerable. No doubt, there are many palliations to be urged for him—his early illness when a boy, and in consequence a sleeplessness which attended him through life, forced him to seek society at nights continually, and society then always involved hard drinking. And after an evening spent either at the deanery of Westminster, or at the houses of any of his other friends, he would rarely fail to spend some hours afterwards at the Cyder Cellars, in Maiden-lane, where he would pour forth Greek and English poetry and prose to any who would listen to him. While alone, he never drank to excess—and he would always assimilate his habits to those of the house in which he was staying: thus, when spending some six or seven weeks with his sister on the occasion of his father's last illness, he lived most regularly and abstemiously. His health through life was never very good, and, whenever he felt unwell, his usual remedy was total abstinence from food; for physic and physicians he had a great contempt, and yet curiously enough many of his most intimate friends were physicians. In a letter written in 1802 to Dr. Davy, he says, 'I have been at death's door myself, but by a due neglect of the faculty, and plentiful use of my old remedy, (powder of post,) I am pretty well recovered.'

In personal appearance he was tall; his head was a very fine one, with an expansive forehead, over which he plastered his brown hair: he had a long Roman nose, and his eyes were remarkably keen and penetrating.* In general he was very careless as to his dress, especially when alone in his chamber, or when reading hard; but 'when in his gala costume, a smart blue coat, white vest, black satin nether garments and silk stockings, with a shirt ruffled at the wrists, he looked

* The following anecdote, which has never appeared in print, illustrates this:—Once when Porson was in the combination room at Jesus College, with Dr. Clarke, Caldwell, &c., there was a dead pause in the conversation; at that moment Kirkby the painter called out, 'Come, Mr. Professor, say a good thing.' Porson, making no reply, fixed his eagle eye on him, and continued to look at him steadfastly, till Kirkby at length found no means of escaping the penetrating glance but by skulking out of the room.

quite the gentleman.'* With ladies, especially those with whom he was intimate—such as Miss Raine, Mrs. Clarke, Mrs. Goodall, &c.—he was a great favourite; and he would spend hours making charades or conundrums for them. The beautiful charade (which has too often been printed to require repetition here) on Cornix, was written to please Mrs. Clarke, whom he calls Iris, on a small heart-shaped piece of vellum about the size of half-a-crown.†

In whatever society he found himself, he would make himself equally popular and agreeable—his friends in London, the Juventus Academica at Cambridge, a stray drover in Smithfield, or a bargee on the Cam, would find equal delight in his society, and would feel equal surprise at the varied nature of his attainments. He was regarded by all as a species of wonder, and many of the leading men of the day made efforts to become acquainted with him. This, however, he never could endure, and he positively refused to make Fox's acquaintance, although the latter put himself to considerable inconvenience to see him. He did not want to be stared at, he said. A curious anecdote is told of him, which illustrates this feeling. Two gentlemen, on arriving at Cambridge in the evening, went and called on Porson: he instantly ordered his bed-maker to bring candles. As soon as they were produced, he coolly took them and placed them on either side of himself, and said, supposing, no doubt, they had come to see him merely out of curiosity, 'Now then, gentlemen, take a view of me!' Direct praise, of which he had plenty in all the reviews and publications of his day, he utterly despised. And Dr. Parr's pompous paragraphs, or Lord Byron's high-flown praise, only made him angry. The writer possesses what illustrates this, and his own beautiful handwriting at the same time—a very curious letter to him from a gentleman of Trinity College, Dublin, written in a very fulsome style of adulation; for instance:—'To have seen and conversed with Professor Porson would alone have accomplished the object of my visit to Cambridge, though it was a favour I durst hardly have promised myself. But to have enjoyed his society and been distinguished by his kindness, to have been indulged in a close and almost familiar intercourse with him, was such a gratification as I shall not risque offending you by attempting to describe,' &c. Porson has written in the stamp in the corner of the page (a space not so large as a sixpence), 'Dear Sir,—I shall

* Pryse Lockhart Gordon's *Personal Memoirs*, i. p. 288.

† A number of charades in English, French, and Latin, by Porson, may be seen in Beloe's *Sexagenarian*, t. ii. pp. 306-308; and in a small periodical work called *The Crypt*, ii. p. 103.

not attempt to return you the too flattering compliments for which I am more indebted to your goodness than to your judgment.' A neatly-turned compliment, however, he was always pleased with—and probably Stephen Weston's 'Dick can beat us all; he can drink all night, and spout all day,' was more to his taste than any compliment he received in print.

In 1792, a short time after Porson vacated his Fellowship,* the Regius Professorship of Greek at Cambridge became vacant by the resignation of Mr. Cooke. There had been considerable expectations of Mr. Cooke's resigning the office some years before, and in that case Porson had been looked on by all as his undoubted successor. Now that some years had past, and he looked upon himself, as he says, 'so completely in the light of an alien from Alma Mater,' the news of the vacant professorship gave him more 'vexation and chagrin than hope and satisfaction.' He spoke at this time to a friend of the difficulty of recalling the mind to a point from which it had been torn, and of how hard a task it was when a man's spirit had once been broken to renovate it. However, his friends all pressing him to become a candidate, he had made up his mind to do so, when it occurred to him that subscription to the Articles would be necessary to enable him to hold the office; but his feelings on the occasion cannot be better expressed than in his own words: he is writing to Dr. Postlethwaite, the Master of Trinity:—

The same reason which hindered me from keeping my Fellowship by the method you obligingly pointed out to me, would, I am greatly afraid, prevent me from being Greek Professor. Whatever concern this may give me for myself, it gives me none for the public. I trust there are at least twenty or thirty in the University equally able and willing to undertake the office; possessed, many of talents superior to mine, and all of a more complying conscience. This I speak upon the supposition that the next Greek Professor will be compelled to read lectures; but if the place remains a sinecure, the number of qualified persons will be greatly increased. And though it was even granted that my industry and attention might possibly produce some benefit to the interest of learning and the credit of the University, that trifling gain would be as much exceeded by keeping the Professorship a sinecure, and bestowing it on a sound believer, as temporal considerations are outweighed by spiritual.

Subscription, however, is not required from candidates to

* Porson's Fellowship was vacated July, 1792, exactly seven years after his admission as Socius Major, in 1785. It is now considered that in a similar case, the fellowship is not vacated till the following October when the vacancies are filled up.

the Greek Professorship, and he was shortly afterwards elected to the office by the unanimous vote of the seven electors,* taking Euripides for the subject of the prelection which is required from all candidates for the Professorship. This diatribe contains a brief sketch of the comparative merits of the three tragedians of Greece, pointing out, with great skill, the distinguishing characteristics of each; and a writer very well able to judge has stated, that though the subject has been so often handled, it would be in vain to search for any account of them which can be compared with this dissertation for judgment, acuteness, elegance, or precision.† In his comparison of them, he considers Æschylus to be the greater poet, but Sophocles and Euripides to have composed better dramas. He winds up his discussion of the merits of the two last as follows:—

'Non diffiteor, majorem me quidem voluptatem ex Euripidis nativa venustate et inaffectata simplicitate percipere, quam ex magis elaborata et artificiosa Sophoclis sedulitate. Hic fortasse meliores tragœdias scripsit, sed ille dulciora poemata. Hunc magis probare solemus; illum magis amare; hunc laudamus; illum legimus.'‡

The composition of his prelection occupied him only two days.

The Professorship to which our critic now succeeded had been founded by Henry VIII. in 1540,§ when Sir John Cheke was appointed the first Professor. Among his predecessors appear the illustrious names of James Duport, and Isaac Barrow,—Joshua Barnes, the first English editor of Euripides and Homer, who has been perhaps cried down more than he deserves,‖ Thomas Pilgrim, one of Bentley's chief college opponents, and Walter Taylor, the brother of John Taylor, the editor of Demosthenes and Lysias. Of late years, the Professors had not sustained the reputation of the University; among them were, Franklin, the translator of Sophocles, and Michael Lort, of bibliographical celebrity; and Porson's immediate predecessors, Lambert and Cooke, have left nothing but their names behind them. The salary was but 40*l.* a-year, having remained the same, although the value of money had altered so much, from

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* He was admitted Nov. 2, 1792.

† *Museum Criticum*, i. p. 119.

‡ The *Prælectio* is prefixed to the *Adversaria*, and has also since been published separately. The original MS. is in the library of Trinity College.

§ Before this time Erasmus and two others had read lectures in Greek. See Romilly's *Graduati*, p. 481.

‖ A very interesting sketch of this unfortunate professor is given by Bishop Monk.—*Life of Bentley*, i. p. 296.

the time of its foundation; and thus Porson's income was not materially increased by his appointment. He continued to reside for the most part in London, visiting Cambridge at times, either to see his friends or to take part in the University examinations,* in which the Greek Professor has a share by his office. His intention of giving lectures was never carried out—why, we have never been able satisfactorily to ascertain. The ordinary biographies state that he was refused rooms for this purpose; but this seems hardly likely. Some other reasons are given by Mr. Maltby in Mr. Dyce's *Porsoniana*. Mr. Pryse Lockhart Gordon states that he actually did read lectures, but afterwards gave them up. But this is certainly incorrect. Whatever was the cause, we cannot regret the result. What Porson did do as Professor, was far more useful to the world than if he had given lectures; and the University has had far more honour from the works that proceeded from his pen than if he had given up all his time to the oral instruction of academic youth.

The authors that chiefly employed our critic's time at this period of his life were the Tragedians, Aristophanes, Athenæus, and the *Lexicon* of the patriarch of Constantinople, given to the library of Trinity College by Roger Gale, which he had transcribed for the press. Upon Aristophanes (this was before Invernizius had re-discovered the Ravenna MS. which had been so long lost) he had employed his most brilliant efforts of emendatory criticism; and he is said to have cried with delight on meeting with a copy of this poet, with a quantity of emendations in the margin, by Bentley—to have found himself anticipated, in a large number of instances, by the great Aristarch; and the correctness of many of his emendations was proved when the Ravenna MS. was collated, as also of many† of those on Hesychius, when Schow's collation of the unique MS. of the lexicographer appeared.

In the year 1795, there appeared from Foulis's press, at Glasgow, an edition of Æschylus, in folio,‡ in the same handsome type as that in which the Glasgow Homer is printed, but without a word of preface, or anything to give a clue to its authorship. A number of new readings were inserted in the text, with an asterisk applied to them, while to many other words an obelus was affixed, as marking them as corrupt.

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* A specimen of Porson's Examination Papers may be seen in Kidd's *Tracts*, p. 392.

† 'An incredible number.' *Kidd*, p. lxv.

‡ A very small number of copies of this edition are said to have been printed; of those on large paper there are said to have been only eleven. One of these, a very noble book, was recently in the writer's possession.

There was never, for a moment, any doubt as to the editor. The *Monthly Review* gave an account of it as Porson's, and under his name it has always gone. He had superintended the press of a small edition in two vols. 8vo, but when this should have appeared as was intended, with a preface, notes, and the Scholia, by some hocus-pocus of the printer it was kept back, and the former issued into the world without his knowledge. The smaller edition was, however, preserved; and at length, in 1806, was published, but without any additions from the Professor's hands, and still without his name. There are corrections of many more passages in this edition than in the folio; and although the text can by no means be considered as what would have gone forth if with his name and sanction, yet more is done for the text of Æschylus in this edition than had been accomplished by any preceding critic. It has formed the substratum for all succeeding editions.

We have now arrived at an important period in our critic's history—his marriage with Mrs. Lunan, sister of Perry, the editor of the *Morning Chronicle*. He had not been supposed to be a marrying man by his friends; and when the event took place, it took every one by surprise. Mr. Gordon gives the particulars:* Porson was sitting smoking his pipe, one evening, at his favourite haunt, the Cyder Cellars, with Mr. George Gordon; when addressing his companion he said—'Friend George, do you not think the widow Lunan an agreeable sort of personage, as times go?' A nod and a compliment to the lady was the reply. 'In that case you must meet me at St. Martin's-in-the-Fields† to-morrow morning, at eight o'clock,' rejoined the other. In the morning, Porson and his friend appeared at the time appointed, and the lady with a female companion: and the ceremony took place, the parties separating when it was over. This was in November, 1796. The reason for the manner in which the marriage was conducted was the fear that Mrs. Lunan's brother, Mr. Perry, should object to it. Porson's intention was to have kept it a secret for some time; but on Mr. Gordon's remonstrating with him, he said at length, 'Friend George, I shall for once take advice, (which I seldom do, as you know,) and hold out the olive branch, provided you will accompany me to the court of Lancaster.'‡ And though Perry was disposed to be angry at first, when the newly-married couple told their story, they were soon received into favour

* P. L. Gordon's *Personal Memoirs*, i. p. 281.

† This is an error; the register of St. Martin's-in-the-Fields contains no record of the marriage.

‡ He usually styled Perry 'my Lord of Lancaster,' from his living in Lancaster-court.

again. The whole affair was a strange one. Her first husband was a very worthless man; he had been a bookbinder, and she had been divorced from him by the Scotch law; but he was still living at the time of her marriage with Porson. The marriage was an eminently happy one to him: she is described as a mild, amiable, and agreeable woman; and, during her lifetime, Porson appeared to be gradually weaning himself from his habits of tippling, and was remarked as paying more attention to times and seasons, and giving up his slovenly habits generally. At this time they lived with her brother, Mr. Perry, whose housekeeper his sister had been since her separation from her first husband. But she sunk in a decline in April, 1797, a very few months after her marriage; and Porson returned to his chambers in the Temple, and his old habits. He had been very fond of her, and, in his later years, would frequently shed tears on speaking of his loss.

His marriage, however, cemented his long friendship with Mr. Perry, who more than any other one person* contributed to his happiness: in various ways adding to his comforts, and affording him a home whenever he desired to change his solitary habits. In return, a great many of the wittiest pieces in the *Morning Chronicle* came from Porson's pen. Whatever may be thought of the tone displayed in general by the newspapers of that day, compared with the present condition of our daily press, there is no doubt that satire and humour entered far more largely into their columns than they do now. Any one who takes up a volume of the *Spirit of the Public Journals* (1797-1815), will be struck with the contrast to what we daily see on our breakfast-tables at present. No doubt a great deal appeared in print then that could not be tolerated now; but while we have gained in propriety, we have lost considerably in other respects. Greek and Latin were not so entirely banished as they are now, and it is by no means improbable that the columns of the *Morning Chronicle* were indebted to Porson's pen to a far greater extent than has been usually supposed, or than can be ascertained at present. And so far were these contributions supposed to have extended, that he has been accused of 'giving up to Perry what he owed the world.' —*Pursuits of Literature*, Dialogue iv., p. 334 (Ed. 1812).† His style is sometimes, however, unmistakeable—thus in the

* With perhaps the exception of Dr. Matthew Raine, of the Charterhouse, a Fellow of Trinity of Porson's own standing, whose house and library were always open to him. Dr. Raine's noble collection of early classics is now in the library of Trinity College.

† See also what is said in the note p. 341, about 'the little *democratick closet* fitted up for the wits at the *Morning Chronicle* office.'

first volume of the *Spirit of the Public Journals* (1797) there are several pieces evidently from his pen. The *Imitations of Horace*, pp. 102, 140, are certainly his, and admirable specimens of his dry humour they are—(the war, and the alarm as to revolutionary principles, are the real subject throughout); and, independently of this, the translations are executed in a clever, off-hand way. We give the following as an extract from one of his introductions, p. 140:—

Having myself studied this poet with uncommon attention, I have, with all my might, endeavoured to preserve these qualities in my version, of which I send you the inclosed ode as a specimen. If you judge it to have less merit than the partial parent believes, you will still allow it, I hope, to soar above the common flight of modern poetry. It is not heavy as lead, like Mr.——; nor dull as ditch-water, like Anna Matilda; nor mad as a March hare, like our present excellent Laureat; nor stupid—but I should never make an end, if I went on with my comparisons. If this sample takes, I mean to publish a translation of the whole by subscription: it will be printed on wire wove paper, and hot pressed—not to exceed two volumes quarto. A great number of engravings will be added by the most eminent artists. . . . . The passages that have an improper political tendency will be carefully omitted. . . . . But these passages are very few, and shall be studiously suppressed. Luckily, Horace is full of loyal effusions, which I shall endeavour to render with spirit as well as fidelity. What, for instance, can be more applicable than the following passage [Od. IV. 4, 22-28] to the present holy war?

We are rather afraid that a somewhat irreverent 'Hymn by a New-made Peer,' p. 248, signed T. Sternhold, and preceded by an extract from Athenæus, is from Porson's pen; and there can be no doubt that the papers styled, 'The Orgies of Bacchus,' in the same volume, are his. Having mentioned these papers, as truth required us to do, we shall say no more about them. They abound with wit, with learning, attacks on the war, and the perpetual accusations of treason that were then bandied about; and there is a bitter paragraph against Dr. Kipling,* for whom Porson had a supreme contempt and dislike. Mr. Kidd says:—'I bewail the unpropitious hours in which these papers were written. His mind must have been overclouded:' and to any one who is intending to read them, we can only give the old advice, 'Don't.' To suppose that these papers give any clue to his real opinions on theological subjects, or that it would be in any way correct to class him among sceptics in consequence, would, we believe, be

* Dr. Kipling was the prosecutor in Frend's trial. Worthless and foolish as Frend's pamphlet was, his trial, as conducted by Kipling and Milner, was a disgrace to the University and to the country.

most unjust. They are, it must be allowed, equally foolish and profane; but their testimony is not to be allowed to counterbalance that of almost every other action in the entire term of his whole life. We believe them to have been written in a sort of wanton spirit of opposition, which possessed him at the time,—unlike anything he wrote either before or after. His better mind must indeed have been overclouded.

It was in the *Morning Chronicle* also that appeared the well-known version of the 'Three children sliding on the ice,' written just at the time when Ireland's Shakspeare forgery was exploded; a fraud, which, by the way, never deceived Porson. He is described when he went to see the pretended MSS. as scarcely looking at them, and at once refusing to set his name to the paper attesting their genuineness, which Dr. Parr, Boswell, and many others had done. A very amusing letter of Porson's, on this subject, to the late Mr. Joy will be found in Barker's *Parriana*, vol. i., p. 420. And doubtless a great many pieces appeared from his pen which it would now be impossible to particularize with any certainty.

About this period (1797, according to Dobree, *Præf. ad Aristophanica*, p. ii.) occurred the calamitous fire at Mr. Perry's house at Merton, which had more influence upon Porson's career than has been commonly supposed. It destroyed, in his own words, the results of twenty years of his life—among them his large collections for a new edition of Aristophanes, and his transcript of the Gale Photius. The original was in his custody at the time; but this, having been entrusted to him by Trinity College, he never allowed to go out of his own keeping: the result to him was, that he afterwards wrote far less on paper, and trusted more to his memory, feeling that a similar accident might occur at any moment. And thus, much as did remain after his death, there was probably very far less than would have been the case if this feeling had not taken possession of his mind.

The Photius* he replaced by incredible labour and perseverance; and the second transcript may be seen in the library of Trinity College, where the original also reposes. Great as the labour of this must have been, it was probably less so to him than it would have been to any one else. He had a strange fondness for the actual manual operation of writing—and a number of examples might be given in proof of this.†

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* A few fragments of the first Photius were saved from the fire, and have been preserved as curiosities. One lies before me now, which I owe to the kindness of the present Provost of King's College.

† A curious instance is given by Dyce—*Porsoniana*, p. 306, note.

Besides the Photius, Trinity Library possesses a transcript of the *Medea*, which Porson had given to the late R. Hole, and also one of the *Phœnissæ* and of the *Plutus*, from which last the edition in the *Aristophanica* was printed; and a copy of the *Roman Eustathius*, with several missing leaves supplied by him in fac-simile. The writer possesses a copy of the *Mirifici Logarithmorum Canonis Descriptio a Joanne Nepero*, Edin. 1614, with the last page, which had been lost, containing some four hundred figures, supplied in his beautiful hand. Certainly no one ever wrote like him. The well-known Porsonian Greek types, now so universal in this country, are due to him; and a considerable portion of Mr. Hodgkin's *Calligraphia and Pœcilographia Græca* was copied from his manuscripts.

At length, after he had held the Greek Professorship for some five years, he turned his thoughts definitely to publication, and in 1797 the *Hecuba* of Euripides appeared—a small, ill-looking pamphlet of seventy-five pages, published in London, and anonymous. It was preceded by a preface of sixteen pages, in which he gave some specimens of his powers on the subject of Greek metres. He here pointed out the correct method of writing several words previously incorrectly written, and expelled that 'monstrous usurper,'* the anapæst, from the third foot of a tragic senarius. The notes are very short, entirely critical—but so great a range of learning, combined with such felicity of emendation whenever a corrupt passage was encountered, is displayed in them, that there was never a moment's doubt as to the quarter whence the new edition had proceeded. For some reason or other, he studiously avoided the office of interpreter in his notes—'interpretandi et illustrandi labore, utilissimo sane, supersedendum duxi, partim ne libellus in librum excresceret,'—a reason which seems somewhat strange, especially when it is remembered how admirably he did translate when he condescended to that branch of an editor's duties: 'Quod per se fortasse non magnum est,' says Dobree, *Prælectio, Advers.* i., p. 6, 'neque tacendum tamen, si quis erat locus Anglice exhibendus, tum vero omnes in stuporem dabat. Ita quodam proprio artificio summam in vertendo fidem cum pressa concinnaque conjungebat elegantia.' The work was not, however, to proceed on its quiet course without being attacked. Gilbert Wakefield, who was then busy on his ponderous edition of Lucretius, had previously published a *Tragœdiarum Delectus*, and on finding no notice was taken by the Professor (from whom a word of praise was no slight honour), determined to bring the artillery of a pamphlet to bear upon him. And shortly

* F. Hare, in the *Classical Journal*, vol. xxi., p. 95.

afterwards appeared the *In Euripidis Hecubam, Londini nuper publicatam, Diatribe Extemporalis*, a tract which, for bad taste, bad feeling, and unsound criticism, it would be difficult to match. In one passage Porson is literally accused of lying, in order to hide his (Wakefield's) merits; and so hasty was the composition, that he actually alters v. 508 of the *Hecuba* into the portentous

Ἀγαμέμνονος πέμψαντος σ' ὦ γύναι, μέτα. (Diatr. p.24),

while the Latin is often so bad as to be difficult to construe. The most amusing part of the pamphlet is his fury against the 'final *ν*,' rather than admit which intrusive letter he tolerates such lines as

Εἴ τις γύναικας τῶν πρὶν εἶρηκε κακῶς.

And

. . . ἄγε δ' ὃ μὲν ἔκκριτον ἄλλων.—*Apoll. Rhod.* iv. 1185.

'At enim te, finalis *ν*,' says he, p. 25, 'cum tua importunitate magnus perdat Jupiter.'*

Again, p. 27, he says of it, 'odiosum illum *ν* finalem,

Ἐχθρὸς γάρ μοι κεῖνος ὁμῶς Ἀΐδαο πύλῃσι.'

At the same time he hesitates not to speak of Porson's 'obstupescenda sane inconstantia,' p. 17: himself he styles 'homunculus, studiis improbissimis inter has temporum angustias victum difficilem sibi suisque vix, aut ne vix quidem extundens.' As usual with Wakefield, he wanders on discussing all kinds of subjects quite alien from his purpose. See a foolish story, in p. 25, about a 'chirurgicus quidam, Cookii comes.'†

Nor was this the only attack made upon the new Hecuba. Godfrey Hermann of Leipsic, then a very young man, had also had his attention turned especially to the subject of the Greek scenic poets and their metres, and besides a lengthy treatise on Greek metres, in 1796, had put forth an edition of the *Nubes* of Aristophanes in 1799. He now even ventured more openly into collision with the Cambridge Professor, by an edition of the *Hecuba*, in which he was freely and severely criticised. We of this generation have grown up so much under the influence of Hermann, and are so familiar with his works written in later times, after he had repented him of his

* See the *Correspondence of Wakefield and Fox*, p. 6.

† Poor Wakefield, bad scholar as he was, hardly deserved the fate that befel him. Scandalous as his worthless *Reply to some parts of the Bishop of Llandaff's Address* certainly is (he openly expresses his exultation at the expected French invasion and conquest of England), an imprisonment of two years in Dorchester gaol was a very heavy punishment. He died, shortly after his liberation, of typhus fever, produced by over exertion in walking. His memoirs make a very amusing book.

early follies, and made himself the great scholar that with all his crotchets and inconsistencies he ultimately became, that we can perhaps hardly realize of how great presumption and bad feeling Hermann was guilty in these publications. Even as late as 1810, Dr. Elmsley, after stating that Mr. Hermann was best known in this country by his work on Greek and Latin metres, characterises that work (the first edition, be it remembered,—not the work *we* are familiar with) as 'a book of which too much ill cannot easily be said, and which contains a smaller quantity of useful and solid information, in proportion to its bulk, than any elementary treatise, on any subject, which we remember to have seen.' And as to his edition of the *Nubes*, besides the choice specimens of criticism given by Porson ad *Med.* 675, the following note, descriptive of Bentley, will give a fair idea of his modesty, taste, and judgment, at that time: — 'Bentleius, summus alioqui criticus, sed nullius auctoritatis in Aristophane, ad quem minime imbutus Attici sermonis cognitione accessit.'—Ad *Nub.* 325. These instances are given, not for the sake of reviving the early misdemeanours of one who has risen so far above the promise that he then gave, but in order to show that the severe chastisement he received was not in the slightest degree heavier than was deserved.

Mr. Porson went on quietly with his Euripides, taking, at first, no notice of either of the attacks upon him, though a careful observation will easily detect allusion to his antagonists. Thus, in the Orestes, which was published in 1798, on v. 64, having occasion to speak of the final *ν*, when he says, 'Cur N finalem in ἐπεκλώσεν v. 12, et similibus addiderim, nemo nisi qui communi sensu plane careat, requiret,' it is easy to see who was in his mind while writing the note. So ad *Orest.* 288, in the words, 'Contra verba quædam ex neutrali transitivam induunt significationem, ut ἐκπτήσσειν, ῥεῖν *Hec.* 181, 532, quæ *insani esset solicitare*,' the reference to the *Diatribe*, p. 16, is obvious. Again, the note on *Orest.* 1427, is evidently a defence of the reading adopted in *Hec.* 53, against Wakefield's attack in the *Diatribe*, p. 10; though no hint is given of it.

So, too, in the *Phœnissæ*, which appeared still without the editor's name in the following year, 1799, Mr. Kidd has pointed out a sly allusion, in the note on v. 1521, to an error of Wakefield in his edition of the *Alcestis*. (*Tracts*, p. 202.)

This method of castigation may perhaps have proceeded from an unwillingness to attack any one by name in a work to which his own name was not affixed; or, more probably, from the same feeling with which his great prototype, Bentley, punishes Hare, in his edition of *Terence*, calling him ὁ δεῖνα, *alius*,

quidam, etc.; or when he wishes to be particularly provoking, *vir eruditus*, but studiously avoiding the mention of his name.*

At length, in 1801, came out the *Medea*, printed at the University Press at Cambridge,† and at the expense of the syndics (we may suppose a different body from those of the '*collection*' time), and with the Professor's name on the title-page. In the last two plays he had been considerably fuller in annotation and illustration, and showed that he could write long notes as well as short ones.‡ He seems much more at home with his readers than hitherto in his notes to this play, and singles out especially the Adolescentes of the University as those whom he chiefly wishes to address and instruct. At the outset, he gives a brilliant note on the use of accents, exhorting all students of the Greek language to persevere in their use, 'scurrarum dicacitate et stultorum irrisione immoti.' It was here, too, that he gave a thorough proof of what his powers were capable in restoring and illustrating the most corrupt portions of Greek literature. And if any one wishes to see how amusing the most intricate Greek criticism can be made, and in how beautiful a style Latin notes on a Greek author may be written, he can hardly spend ten minutes better than in reading Porson's note on *Medea*, 139-140. It is in his notes to this play, too, (v. 675) that he first, by name, attacked Hermann; and the chastisement given there almost equals that critic's prodigious demerits. It appears probable, also, that in the 'si quenquam discipulum meum crederem tam stupidum esse aut bardum, ut hoc nesciret,' (Ad v. 139, I.), there is a hit at the German critic.

He has been accused of being too severe in his censures of others, and too parsimonious of praise. There is, perhaps, some ground for the former charge. Reiske and Le Clerc are spoken of very harshly, and perhaps somewhat unfairly (ad *Orest.* 245); and §Invernizius '*flos criticorum*,' and Ammonius, '*vir metri callentissimus*,' *Hec.* 269, meet with no mercy at his

* Monk's *Bentley*, ii. p. 227.

† Of this it may be worth mentioning, there were two copies printed on vellum. A leaf of one of them is in the writer's possession, obtained at the sale of a great friend of Porson, the late Rev. G. A. Browne.

‡ We have heard it remarked by a gentleman, who is perhaps better fitted to judge than any one now living, how very free Porson's notes are from the ordinary 'slang' of Latin note-writers. We wish his example had prevented the pernicious practice of writing English notes from creeping in, as seems to be the case at present. See Dr. Wordsworth's *Preface to the Bentley Correspondence*, p. xi. sqq.; and *Gentleman's Magazine*, Sept. 1843, p. 283.

§ See also the note on *Med.* 245. 'Graiæ gentis decora, Ammonius et Invernizius.'

hands. So, too, Jacobs has a sarcastic quotation from Lucan directed against him.* But it was the fashion of the time, and Porson had felt very bitterly the shameful and foolish attacks that had been made on himself. For the other charge we can see no ground whatever; and were it worth while, a quantity of laudatory passages might be produced from his writings, where real critics, such as Bentley, Valckenaer, Ruhnken, and Wyttenbach, are treated with the respect due to them. At the same time, he remains constant to the practice which he, years before, had adopted in his notes to Toup, not to crowd his pages with 'Pulchre, bene, recte,' &c., whether deserved or not.

Soon after this appeared, what must be considered the most brilliant of Porson's works, the new edition of the *Hecuba*, with the supplement to the preface. This last is probably owed to Hermann's attack upon him, as it forced Porson, in spite of his indolent habits, to come forward in his own defence; and probably of all the single pieces of minute criticism that have appeared on these subjects, the first place must be given to this. The extreme beauty of the style, the steps by which the reader is carried on from one point to another, and the richness of the illustration, make it one of the most amusing of diatribes. The metrical laws which he promulgates are laid down with such clearness, and illustrated by such a number of apt examples, as to make what had been a puzzle to the best scholars of past times, easy to the merest tyro in Greek scholarship. It was here that his canon respecting the *pause* was fully stated and elaborated.† But to understand the 'Supplementum ad Prefationem' thoroughly, a careful perusal of Hermann's *Hecuba*, and Treatise *de Metris*, is necessary. A tacit allusion to this work occurs in almost every line; and if any one will compare the following passage, page xl. of the *Supplement* with pp. 176-177 of Hermann's Treatise *de Metris*,‡ he may picture to himself the feelings of the German after the perusal of the former:—

'Verum quantumvis hanc veniam postulent tetrametri Iambici, cavete, adolescentes, credatis, omnes licentias admittere, qualis, *e. g.*,

Τῇ παιδὶ τοὺς αὐλοὺς ἐχρῆν ἤδη προχείρους εἶναι.

At enim, dicetis, quid opus erat hoc monere? Quenquamne esse auribus adeo destitutum, ut hæc verba pro versu venditet? Recte.

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* *Orest.* 1080. There is, however, an allusion to Wakefield, who (*Diatribe*, p. 21) had taken Jacobs' correction under his patronage.

† It was hinted at in the first edition of the *Hecuba*, v. 347. See also *ad Phœn.* 1419, and the very amusing remarks in the letter to Dalzel. *Museum Criticum*, i. p. 330.

‡ I must beg my readers to remember, that it is the first (1796) edition of the *De Metris* to which allusion is made.

Neque ego hercule credo quenquam hodie esse, qui talia portenta pro versibus obtrudat, &c.

In the additional notes introduced in this edition of the Hecuba there are many allusions to Wakefield's attacks; for instance, on *Hec.* 1172, in answer to a foolish attack of Wakefield's on an expression of Pierson, he begins his defence of that great scholar with the words, 'Ac ne quis scurra aut sycophanta Piersoni manibus insultet,' &c. On one occasion, ad *Hec.*, 153, he quotes the *Diatribe Extemporalis* by name, and with praise.*

A third edition of the *Hecuba* appeared in 1808, and he left corrected copies of the other plays, which appeared soon after his death. It was said that the *Hippolytus* had been transcribed for the press, but if so, the transcript has disappeared. And thus these four plays are all that were accomplished of the projected edition of Euripides. Why he did not proceed with the other plays, we have never seen explained. He lived six years after the second edition of the *Hecuba* was published—a considerably longer period than had been required for the publication of the four: nor from what was found in his papers after his decease, was there so much done for Euripides as for many other authors, with the exception of the Supplices and the two Iphigenias, and his notes on these had been written when a very young man. It is most probable that his natural indolence, and dislike to composition, coupled with his attention being employed on other things, led him to procrastinate and put off, until death put a stop to this and all other literary projects.

But incomplete as these four plays are, if regarded in the light of a projected edition of the entire works of the poet, it is hardly too much to say that no single critic has ever so advanced the cause of Greek literature as Porson, in this one volume, has done. We may, perhaps, think that Bentley possessed a wider range round which his vast learning sweeps, or that Valckenaer displays a greater prodigality of illustration, but there is a quiet power of reasoning and an accuracy in Porson's criticisms which no one has ever reached. And the

* It would be a great advantage to students of Porson's notes, if, when a new edition is called for, instead of other people's remarks, explanations of the allusions of which we have been speaking were given. His irony has sometimes here misled his readers, and probably no one has read the note on *Med.* 634 without considerable surprise;—'Cum igitur dixi in *Præf. ad Hec.* p. xi. 'In Euripide usque ad hunc diem semper editum est ὄιστὸς,' *erravi*, sive tu mavis, humanissime lector, MENTITUS SUM, Musgravii editione deceptus;'—which a reference to Wakefield's *Diatribe*, p. 7, explains at once.

influence he has had upon classical scholarship may be easily tested by comparing a Greek play as edited since his time, with one put forth before him. And we believe that it is in a great measure due to him that classical studies have become the very important branch of education that they are. We see that the emending or unravelling a corrupt or hard passage of a classical author, is not mere guess or chance work, but requires as close an attention and as careful a chain of reasoning as a mathematical problem; and thus, that the real scholar must have been in the habit of cultivating his powers of close reasoning and accurate thought almost, if not quite, as much as the mathematician. Thus, in any of his canons, the rule is stated clearly and distinctly, the exceptions pointed out with equal care, a quantity of instances are brought forward to prove his point, and then the objections are stated and severally discussed. It is not difficult to trace in Porson's habits of thought the influence that the study of mathematics had upon him.*

But the great glory of Porson is his power of emendation —the one in which he far excelled all his predecessors, even Bentley. When one of his emendations comes under our observation, we feel both that thus the poet has used the best word, and the critic has known what that word was (see above, p. 136); that the poet *could not have written otherwise*. Now, in many of Bentley's corrections, it requires to have Bentley's masterly arguments to make us inclined to admit their truth, while even then we feel as if he had made the worse appear the better reason. Thus, of all the numerous attacks upon his Horace, none was really so bitter as that which, without adding a word of comment, gave all his alterations of the text separate from his notes. If any one wishes to see of what emendatory criticism (perhaps we should rather say, Porson's emendatory criticism) is capable, we would refer him to his refiction of the amusing fragment of a dialogue given by Dion Chrysostom in his 64th oration—Kidd's *Tracts*, p. 228. And we would especially recommend him to look at the passage as it appears in Dion, especially in one of the older editions, and then as it is quoted in Dr. Wordsworth's *Athens and Attica*, p. 246, ed. 2.

We must not quit the subject of Porson's Euripides without a word or two on the style of his notes. For the neatness and purity of the Latinity they are certainly unequalled. Some few expressions have almost become proverbial, *e.g.*,

* He was to his dying day very fond of these studies. There are still preserved many papers of his scribbled over with mathematical calculations, and when the fit seized him in the street, which caused his death, an equation was found in his pocket.

'Nihil contemnendum est neque in bello, neque in re critica' (*Med.* 139 V.); and 'Vide quid faciat unius literulæ mutatio' (*Med.* 293). His taste was so perfect and his judgment so good, that he equally avoids the pitfalls of jejune harshness on the one hand, or excessive prodigality of ornament on the other. And he thus completely attains, what has most justly been declared to be the great object to be aimed at in critical annotations—perspicuity. A very good judge* has pointed out how misplaced 'the flowers of rhetoric are in discussions on the position of an accent, the luxation of a dochmiac, or the hallucination of some sinful copyist.' From this Porson is entirely free—while at the same time his critical discussions are frequently enlivened by remarks and illustrations, which, while they spring strictly from his subject, take a far wider range than the mere elucidation of a Greek poet.†

While Porson was in course of publishing his Euripides, the far-famed edition of Homer, known by the name of the *Grenville Homer*,‡ was printed at the Clarendon Press, and the editors being anxious to affix a collation of the well-known Harleian MS. of the *Odyssey* (MS. Harl. 5674), applied to Porson; there resulted what may form a model to all future collators of MSS. Dry, too, as such a work must be, he manages to enliven it; and there are choice specimens of criticism interspersed throughout; our old friend, the final ν, for instance, comes in. This collation was reprinted in the *Classical Journal*, and has been also incorporated into the last Oxford edition of Homer, and probably into several foreign editions. Soon afterwards, January 13, 1803, he presented to the Antiquarian Society his wonderful conjectural restoration of the Greek inscription of the Rosetta Stone, the last twenty-six lines of which are more or less mutilated. This was not published till some years after his death, in the 16th volume of the Transactions of the Society.

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* Bishop Blomfield.

† See, *e. g.*, the note on *Orest.* 663. 'Insigni exemplo ostendere volui, quantos in errores se induant homines docti, quot ineptias effundant, si semel iræ, odii, invidiæ, aut pravi cujusdam affectus impulsu contra ea scribere incipiant, quæ vel nequeant vel nolint intelligere.'

‡ Of the Grenville Homer there were twenty-five copies printed on large paper—magnificent books—but to a few only of these were attached some (22) additional leaves, containing a few extra various readings. We have once seen one of these 'bibliographical gems,' as the late Dr. Dibdin would style them—the various readings are chiefly those of the Aldine text. The less valuable large page copies will be found in most large libraries; there is one in the Public Library at Cambridge, and also in that of King's College. Porson's copy sold for 87*l.* 3*s.*

For the last few years of his life, he continued, for the most part, to reside in London, with occasional visits to Cambridge, to Eton, and to his relatives in Norfolk. In 1806, when the London Institution* was founded, he was appointed principal librarian, with a salary of 200*l.* a year, and a suite of rooms: and thus his latter years were made easy as far as money was concerned.

Porson's powers as a Greek critic were so stupendous that they have almost obscured the fame of his knowledge of other branches of literature. These, however, were only inferior to the former. We have already spoken of his fondness for mathematics,† and the wide range he possessed over all descriptions of English writers, from divines to farce writers. With French and Italian literature, especially the former, he had a very extensive acquaintance, and his familiarity with Shakspeare gave occasion to his being enrolled by Mathias, in the *Pursuits of Literature,* amongst the 'Black Letter' commentators:‡

> Then Porson view *Nebrophonos* the shrewd,
> Yet foaming with the Archdeacon's critick blood.

Of his epistolary powers, there are several specimens in print. Perhaps the most amusing is that which has been already referred to, his well-known letter to Dalzel; and the extremely neat and kind letter to Dr. Davy, on his appointment to the Headship of Caius College, will be found in Mr. Kidd's collection. But there were few things he disliked more than letter-writing, and in some cases, it is to be feared, he laid himself open to the charge of ingratitude through not answering letters.

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* At that time in the Old Jewry; it now is in Finsbury Circus; and in the noble library are many volumes enriched with Porson's writing. He was elected unanimously by such of the governors as were present. The letter announcing to him the fact of his election, from Richard Sharp, Esq., M.P., F.R.S., F.S.A., one of the first governors of the Institution, now lies before me.

† Among other literary schemes stopped by his death, was an edition of Diophantus.

‡ *Pursuits of Literature,* Dialogue i., p. 99 (ed. 1812). Mathias had been a Fellow of Trinity College some few years senior to Porson. He never directly acknowledged the authorship, though it must have been tolerably well known. Porson always styled him 'The Pursuer of Literature.' As for the term 'Nebrophonos,'

> Archdeacons, rats, and such small deer,
> Have been Dick's food for many a year. (*Ib.* note, p. 99.)

Travis was Archdeacon of Chester.

A note of Porson's on the word 'acknowne' in *Othello,* act iii, scene 3, will be found with his name after it in Malone's *Supplement to Shakspeare,* i., p. 367, which has been incorporated into certain recent editions without the smallest acknowledgment.

There remains little else to be told: he continued to hold his post of librarian at the London Institution, receiving perpetually visits from all who wished to consult him on any point of ancient literature, and always ready to give his assistance. It is remarkable that at this period hardly any classical work was published without containing some acknowledgment of assistance from him; and in several others, that did not appear till some years after his death, *e.g.*, Maltby's *Thesaurus* and Kidd's *Dawes*, a considerable debt to him is acknowledged. See, especially, Clarke's *Greek Marbles*, p. 56.

The circumstances of his death have been so fully detailed by Dr. Adam Clarke,* that a very short account will only be necessary. On Monday, September 19, 1808, the day of the burning of Covent-garden Theatre, after calling on his brother-in-law, Perry, Porson was seized with an apoplectic fit, at the corner of Northumberland-street, Strand. He was taken to the workhouse in St. Martin's-lane; and his person not being known, an advertisement appeared in the *British Press* the following morning, stating the facts. Mr. Savage, the under librarian of the London Institution, knowing that he had been out all night, and fancying from the description the person thus found was the Professor, went to St. Martin's-lane, and there found him a little recovered, and feebly walking about the room. They went home together, Porson showing on the way that his mind was not in the least affected by his recent seizure, by conversing in his usual pleasant and instructive manner. Soon afterwards, Dr. Clarke came to the Institution to speak to him about an inscription upon a stone brought from Eleusis, and found his mind as clear as ever, but his articulation difficult, all the organs of speech having apparently suffered a partial paralysis. Dr. Clarke gives a curious instance of the way in which even then his power over the Greek language displayed itself. This is said to have been the last conversation he was capable of holding on any subject. In the afternoon he went to Cole's Coffee-house, St. Michael's-alley, Cornhill, where a second fit seized him; and, after being brought back to the Old Jewry, he was with some difficulty got into bed, which he never left again. He continued sinking till Sunday, September 25, when it appeared that he could not survive the ensuing night; and, exactly as the clock struck twelve, with a profound groan, he died, in the forty-ninth year of his age.

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* *Narrative of the Last Illness and Death of Richard Porson, A.M.* Lond. 1808. This was reprinted in the *Classical Journal, No. IV.*, Dec., 1810.

Mr. Savage, the under librarian of the London Institution, to whom Dr. Clarke owed several of the particulars of Porson's last hours, concludes his account thus:—

In communicating these facts relative to the illness of Mr. Porson, I cannot let this opportunity escape me, our official situations bringing us a good deal together, without being allowed to lament, in common with his best and most intimate friends, the loss of so pleasant and agreeable an acquaintance. For, to the manners of a gentleman, and the most gigantic powers of learning and criticism, he joined the inoffensiveness of a child; and I cannot help wishing, that some persons who have (with no common industry, especially since his decease,) been active in bringing his faults before the world, had been endowed with a small portion of some of his good qualities, one of which, among many others, was, *never to speak evil of the moral character of any man.*

He was buried on October 3, 1808, in the chapel of Trinity College, Cambridge, Bishop Mansel, the Master, reading the funeral service; the Vice-Master and Seniors (two of them of his own year, Hailstone and Raine—and a third, his old Examiner, Lambert, who had been Greek Professor before Porson's immediate predecessor, Cooke) bearing the pall, to which were affixed various copies of Greek and English verse,* as was then the custom in funerals in the University. His tomb is at the foot of Newton's statue, at the opposite end of the chapel in which rest the remains of Bentley; and close to which, in after times, were to rest those of Peter Paul Dobree and John Wordsworth, both like him removed before the promise they had given of excellence in the same pursuits had been fulfilled.

His library was divided into two portions, one of which was sold by auction soon after his death; and the other, consisting of the greater number of his books which contained MS. notes, including the transcript of the Photius and a quantity of MS. papers, was bought by Trinity College, at the price of one thousand guineas, in the library of which Society it remains. The notes are, for the most part, written in copy-books, in an exceedingly minute hand—some sixty separate notes on different authors in the whole range of Greek literature being written on a small quarto page. Many are on scraps and odds and ends of waste-paper. There is a collection, of considerable extent, of letters to Porson from Eich-

* A specimen of these, by Mr. George Burges, may be seen in the *Classical Journal*, i. p. 81. Several of the papers of the time, in giving an account of the funeral, called them *Epithalamiums*. I believe the last occasion on which this practice was observed, was at the funeral of Dr. E. D. Clarke, in Jesus College, in 1822.

stadt, Villoison, Gail, and other continental scholars of the time. Among them is one letter from Hermann.*

It is very interesting to observe how almost all the scholars of the country joined in contributing to his fame, by editing his posthumous remains: thus Bishop Monk, his successor, and Bishop Blomfield, edited the *Adversaria* from the books and papers in Trinity College (containing his masterly notes on Athenæus and the Greek poets); Professor Dobree edited his notes on Aristophanes and the long-looked-for Photius; Mr. Kidd collected his scattered reviews; the late Dean of Christchurch published his notes on Pausanias and Suidas; while Bishop Turton came forward to defend his literary character.† There still remains in Trinity College a considerable quantity of notes on Hesychius, on the Greek historians, and on Latin authors, for which it is much to be wished an editor could be found. A valuable volume, too, would be formed by collecting the notes on Xenophon, Appendix to Toup, Collation of the Harleian Codex, and the few scattered reviews and notes that Mr. Kidd has omitted.‡ And in looking on the ten thick octavos which his works occupy, it must be allowed that there are very few scholars who have done, even in quantity, anything like as much as Porson did.

We remember to have seen, in some periodical publication, an elaborate comparison between the works of the two great English scholars, Porson and Bentley,§ reckoning on Bentley's

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* There are many other letters both by and to Porson in existence in private hands. If these all could be collected, a very interesting and valuable volume would be obtained.

† The *Adversaria* appeared at Cambridge in 1812, the *Aristophanica* in 1820, and the *Photius* in 1822, all published at the expense of Trinity College. Mr. Kidd's book, *Tracts and Miscellaneous Criticisms of the late R. Porson, Esq.*, was published in London in 1815. We have always fancied that 'the modern Parson Adams,' in Beloe's *Sexagenarian*, ii. p. 138, was intended for Mr. Kidd, though we have never seen this suggestion (or even any suggestion for this character) in any of the numerous manuscript keys of that strange work in existence. There is something very touching in Kidd's admiration and love for his hero, which makes the book, with all its ill arrangement and oddness of style, a very delightful one. The notes on *Pausanias* are at the end of Gaisford's *Lectiones Platonicæ*, Oxon, 1820, and those on *Suidas* in the Appendix to his *Suidas*. Oxon, 1834.

‡ Such a collection now lies before me, made some fourteen years since—it forms quite as thick a volume as the *Tracts and Criticisms*.

§ It is pleasant to read of Porson's admiration for Bentley. 'When I was seventeen,' he once said, 'I thought I knew everything; as soon as I was twenty-four, and had read Bentley, I found I knew nothing.' He once, says Mr. Kidd, in conversing with a North Briton, portrayed the prominent features of Bentley's literary character with a justness and familiarity which so warmed the plain, honest hyperborean, that, before they parted, he ventured to inquire if Dr. Bentley

side only such as he had accomplished before he reached the age at which Porson died. In this comparison, the *Dissertation on Phalaris* is weighed against the *Letters to Travis;* the *Emendations on Menander* against those on *Athenæus;* the *Epistola ad Millium* against the *Supplementum ad Præfationem*, &c. I forget to which of the two the palm is given. But it is not thus that a fair comparison between the two, or any two such men, is to be obtained. Bentley spent a long life of literary ease and leisure, in the first of academic positions, with fame and fortune always smiling upon him, and, for the most part (in spite of his 'great colds'), in the enjoyment of the rudest health. Porson's was a life-long struggle against ill health, poverty, and neglect; treated with coldness by many, and with active opposition and dislike by some. And, certainly, the encouragement given to such pursuits as those to which these two devoted themselves was far greater at the beginning of the last century than at the end of that period. One of the most remarkable points in Bentley's literary history is the great intercourse there was between the English scholars and those of the Continent. Thus almost as many of his works were printed and published in Holland as in this country. At the end of the last century, the difficulties of intercourse had very much increased; the great band of Leyden scholars had somewhat fallen off; and for ten readers that Bentley must have had, a scholar of Porson's day would hardly have had one.

In claiming for Porson a higher niche in the temple of critical fame than all his predecessors (Bentley included),* we look rather to the influence his writings have had on English scholarship and education than to the actual extent of canons discovered or ground cleared. We have already stated our belief that it is to him, chiefly, that English scholarship (may we be permitted to particularize, especially, Cambridge scholarship?) owes its accuracy and its certainty; and thus as a branch of education—as a substratum on which to rest other branches of knowledge often infinitely more useful in themselves,—really takes as high a rank as any of those studies which can contribute to form the character of a well-educated English gentleman.

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were not a *Scotchman*. Mr. Kidd should have finished the story—'No, sir,' said Porson, 'he was a SCHOLAR.'

* See Bishop Blomfield's Review of Gaisford's *Hephæstion*, where, after speaking of Bentley and Dawes, he adds, 'Porson, a name greater than them all, added to the varied erudition and universal research of Valckenaer and Ruhnken, a nicety of ear and acquaintance with the laws of metre, which the former possessed but imperfectly, and the latter not at all.'—*Edinburgh Review*, vol. xvii., p. 382.

Enough has been already spoken on the character of Porson's style of criticism; a few words are called for on his general character. The one great excellence that gives the tone to all his writings, and so much influenced the events of his life, was a love of truth—truth for its own sake, regardless of all consequences. It was this that made him resign his fellowship, when he had no prospect but of the most abject poverty before him—it was this that made him treat Travis with the withering sarcasm with which his *Letters* abound. With this may be joined his utter contempt for money, and for the estimation in which wealth is held for its own sake.

Some have thought that he would have been as great a statesman or as great a general as he was a scholar, and have lamented that his great powers were not spent upon subjects that benefit mankind more than Greek criticism. But it must be remembered that a man's course of life is not always, or even usually, in his own power; and that each person's object should be to excel in that particular course to which he has been called. It is a foolish charge to bring against a statesman that he is not a poet, or against a historian that he is not a general. The person who holds the first place in any department of learning or of action is one who entitles himself to the regard and the remembrance of posterity; and, to use the words of Dr. Young (*Encycl. Brit.*, Art. Porson), 'As far as regards the possession of a combination of the faculties which Porson did cultivate, he appears to have been decidedly the most successful of any man on record in the same department.' And perhaps this memoir cannot be concluded better than with the words of Dr. Turton: 'In a word, if in a general council of scholars an individual were to be selected and sent forth to take a survey of any region of antiquity, profane or ecclesiastical, it is quite certain that the person who should be found to possess Mr. Porson's endowments would command every vote.'*

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* There are two portraits of Porson in existence—one painted by Hoppner, in the Public Library at Cambridge; the other, by Kirkby, in the dining-room of the Master's lodge at Trinity College. They have both been engraved. There are busts of him both in the chapel and library of the same college. There is said to be, or to have been, a third portrait, at the Cyder Cellars in Maiden-lane.

H. R. L.

GEOLOGY.

IT is only perhaps with doubtful propriety that we can speak of one branch of science as more important than another, since we must suppose every department of nature essential to the existence and maintenance of the glorious structure of the material world. Seen as it is by us, as through a glass darkly, we can still recognise something of that harmonious dependence of one part on another which it would doubtless present to us in an infinitely higher degree, did we possess the faculties requisite for the more perfect contemplation of it. So far, then, as every part of nature is essential to the complete harmony of the whole, one department of science may be said to be as deserving of attentive study as another. At the same time, we may assert, without narrowness of view, or mere personal predilection, that one branch of science is superior to another in reference to the pleasurable occupation which the cultivation of it affords. In this respect, out-of-doors geology is a charming pursuit. The laboratory, the dissecting-room, and more generally the apartment of the experimentalist, are not always places of inviting aspect, or those to which we should resort for other enjoyment than that which appertains to the results of our labours. Even the astronomer, obliged as he is so frequently to prosecute his researches in the dark watches of the night, must often find his pursuit otherwise than pleasurable, especially if he be one of those who are said to observe all night and calculate all day. The geologist, on the contrary, has always a teeming source of enjoyment in his work. The mountains and the valleys are the scenes of his labours, which he usually prosecutes under summer influences, and amidst scenes by which nature so often touches and gladdens our hearts. He enjoys the pleasures of the tourist and the artist, combined with those of his own pursuit. We have ourselves sometimes wandered over the mountains with as aimless a purpose as any other tourist, and

occasionally also with merely artistic purposes; but the mountains have never yielded us such sustained and varied delight as when we have traversed them in our geological capacity, but, at the same time, without being so engrossed with the study of their internal structure as to neglect the contemplation of their external beauties; so far is it from being true, in this case, that the earnest search after the phenomena of nature deadens our sense of the beautiful. The geologist, too, has a great advantage over the mere tourist (whatever may be the feeling of the latter for the beauties of nature) in his greater determinateness of purpose, and the consequent greater vigour with which he prosecutes it. The geologist will not unfrequently sally forth when the tourist or the artist would remain within doors, deterred by unpropitious appearances of the weather and a falling barometer; and his determination will often be rewarded by the spectacle of those sublime and touching aspects which the mountains delight to assume in such rapid succession, under the alternate influences of rain and sunshine. We have sometimes witnessed scenes under such circumstances, which, though of transient duration, have been worth almost half a summer's wandering under the more prosaic aspects of broad sunlight. This is one of the indirect advantages of the pursuit of a determinate object, and we should indeed rejoice if this passing allusion to it should be in any degree instrumental in converting some listless tourist into a vigorous geologist, who, instead of returning from his mountain ramblings with a feeling akin to that of the satiety and weariness superinduced by aimless occupation, should return, not only with a fresher feeling of enjoyment, but also with the consciousness of having acquired some insight into one great department of nature.

The notions usually entertained of the objects and results of geological research are, we suspect, extremely partial and imperfect. The country gentleman probably appreciates it for its bearing on draining and subsoils; the miner may think of it only in reference to his mines, his veins of metal or beds of coal. And such persons are wise in their generation in thinking of the science under these limited aspects, for great indeed is the value of *Practical Geology*. The collector, again, will value it as filling his cabinets with curious specimens of existing rocks and former organisms. But these are not the aspects under which we wish to view the subject at present, though far be it from us to undervalue the practical applications of the science, or even that amusement which goes little farther than the collection of geological specimens. We would regard it not as practical but as speculative philosophers; and in this

character we value the mine, not for the treasures it yields, but for the geological facts it reveals. Nor are we, in our present mood, disposed to appreciate, perhaps, as we ought, the value of productive soils. They are apt to hide the geological treasures beneath them. For the time, we ignore practical geology, and would direct the attention of our readers to the subject only as a great branch of speculative science which has already done so much to enlarge our views of the economy not only of the inanimate, but also of the animate portion of the material world.

But how, it may be asked, is the student or mere general reader to enter upon these larger views of the subject without a previous acquaintance with its details? And, doubtless, if any one would make himself an accomplished geologist, and prepare himself to enter fully into the more profound investigations of the science, he must gain a knowledge of its phenomena with a certain degree of detail; but the more complete a science becomes as a science of observation, the less necessary is it for the philosopher who would solve its physical problems to become himself an observer. Newton and Laplace troubled themselves little in looking through astronomical telescopes. They took their facts on the authority of others. And so, also, the general geological reader may accept the facts established by the observations of the field geologist, when he would acquaint himself with the conclusions of those who have endeavoured to solve the physical or paleontological problems which the science presents to us. Hitherto, geological treatises professedly of an elementary character have dwelt almost exclusively on matters of detail, with meagre and imperfect notices of the principles and reasonings on which the great conclusions of the science depend. A heavy burden is thus attempted to be laid on the memory, with little demand on the reflective and reasoning powers of the reader. This defect in elementary works is not restricted to geology; we conceive it to be common to almost every branch of science, and should rejoice in any attempts to correct it by the publication of works which, without technicalities or intricate processes of investigation, should convey to the student or general reader some correct idea of the physical principles and fundamental propositions of the science treated on, and the general reasoning by which we ascend in logical sequence to its remoter conclusions. A considerable amount of knowledge of this higher kind might be imparted to those possessed of common powers of abstract thought and that previous acquaintance with scientific matters which lies within the reach of all persons of respectable education and ordinary

intelligence. The seeds of knowledge have been sown broadcast, as it were, of late throughout the land, and have not fallen altogether on stony ground; but to ripen them into greater maturity, there seems to be required teaching of a higher order than that which contents itself with an unproductive accumulation of facts.

It must not be supposed that we now profess to enter, in any adequate degree, into this higher kind of teaching as regards the branch of science on which we are writing. An essay is not a treatise. But we shall endeavour to explain, though briefly, somewhat more distinctly than elementary writers have hitherto attempted to do, the principles, the logical arrangements, and the fundamental propositions of the subject, with the general facts and reasoning by which those propositions are established; and, finally, we propose to discuss a few of those speculative questions to which geology naturally leads us. Our readers, however, must not expect that, in this attempt to popularize geology to a certain extent under its theoretical and speculative aspect, we can so treat the subject as to supersede, on their part, the necessity for mental exertion. We have no desire to minister to the craving for popular writing of that kind. Our object will be, on the contrary, to afford encouragement to thoughtful effort, so far as we may succeed in giving, within our limited compass, an exposition of so extensive a subject as geology, in a form sufficiently comprehensible to minds of ordinary intelligence, possessing little acquaintance with the details of the science.

1. Before we proceed to the statement of geological phenomena, and the consideration of the physical causes to which they may be referable, it may be well to make a few remarks on an objection with which we may be met on the very threshold of our subject. It may be denied that the phenomena are to be referred to physical causes at all, but are to be regarded as due to the direct and immediate agency of the Creator himself. This view has been frequently maintained by the opponents of geology, with reference to all phenomena lying beyond the pale of their own limited physical theories. One of the most striking instances of the maintenance of these views is to be found in the eloquent author of the *Genie du Christianisme*. He maintains the recent creation of the globe in the condition in which we now behold it, on this principle:—

> Dieu a du créer, et a sans doute créé le monde avec toutes les marques de vétusté et de complément que nous lui voyons.

And he continues:—

'En effet, il est vraisemblable que l'auteur de la nature planta d'abord de vieilles forêts et de jeunes taillis; que les animaux naquirent, les uns remplis de jours, les autres parés des graces de l'enfance. Les chênes, en perçant le sol fécondé, portèrent sans doute à la fois les vieux nids des corbeaux et la nouvelle postérité des coulombes. Ver, chrysalide et papillon, l'insecte rampa sur l'herbe, suspendit son euf d'or aux forêts, ou trembla dans le vague des airs. L'abeille, qui pourtant n'avoit vécu qu'un matin, comptoit déjà son ambroisie par générations de fleurs. Il faut croire que la brebis n'étoit pas sans son agneau, la fauvette sans ses petits; que les buissons cachoient des rossignols étonnés de chanter leurs premiers airs, en échauffant les fragiles espérances de leurs premières voluptés.'*

Perhaps the best reply to such views is to be found in an eloquent passage, by the same author,† in which he contrasts the inconsistencies in the character and qualities of man with the harmony which pervades the rest of creation—'devrent-il poëte, il perd la pensée.' With such adversaries we cannot contend, simply because there is no common ground to fight upon. We should be but as combatants placed beyond the reach of each other's weapons, whose most vigorous efforts could not go beyond warlike gesticulation. Time, however, must generally bring such belligerents to closer quarters, and oblige them to decide the question at issue by actual contest. Such, in fact, has already been the case, in a great degree, in the present instance. We believe that few thoughtful men now adhere to opinions like those above stated—perhaps scarcely any persons, except those who consider themselves as acting only with due reverence for the Bible, when they decide such questions in utter and even professed ignorance of all the facts and reasonings to which they are opposed. Far be it from us to offend unnecessarily against the conscientious scruples of such persons. We prefer leaving these differences of opinion to the quiet influence of time, which, we doubt not, will produce as universal an assent to the disputed dogmas of geology, as it has already produced to those of astronomy. We would, however, make one remark. Views like those above stated stand in direct antagonism with the great *argument of design*, so beautifully built up by Paley and others in proof of the being and attributes of the Deity. Many fossil specimens are as perfect in their minutest details as their living analogues, and present the same indications of exquisite adap-

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* *Genie du Christianisme*, par M. Chateaubriand, p. 190.
† *Ibid.* p. 146.

tation of the means employed to the ends to be obtained. How, then, can we contend that the living specimen affords such unanswerable proofs of *design*, while we entirely reject exactly similar evidence in the fossil specimen, and consider it to have been created what it now is—an inanimate block—instead of regarding it as a mineralized relic of what was once an organic and living substance, in the active exercise of the functions which are implied in the perfect remains of its structure? With such views, natural theology can have no foundation to rest upon.

2. There is also another preliminary question to be noticed before we can discuss the relations between geological phenomena and the causes to which they are to be referred.

Geology can be regarded as a physical science so far only as we can consider the phenomena it presents to us as having originated in physical causes. The determination of the nature and operation of those causes is the object of the science. And here its peculiar and distinctive character must not be forgotten—its historical character. It deals not so much with that which *is*, as with that which *has been*. As ordinary history treats partly of events and institutions belonging to a continuous chain, of which the first links are lost in the darkness of remote ages, and partly of those of comparatively recent origin; so geology deals partly with a series of natural phenomena, linked together by the agency of recognised physical causes, till we ascend to that high antiquity in which Nature's records become illegible; and partly, also, it treats of things—new forms of organic life—which appear to have had no existence whatever before the epoch at which we recognise their introduction on the surface of the earth. How, then, are we to connect this introduction of totally new objects with the ordinary sequence of events connected by natural causes? Are such objects—intruding themselves, as it were, upon the face of the globe, without traces of ancestry or discoverable antecedents of any description—are they to be referred to the operation of ordinary causes, or to some higher order of causation, or to immediate acts of Creative power? These are questions of deep interest to thoughtful and speculative minds anxious to discover some glimpses, however dim, of the manner in which God has chosen to deal with His material universe. We propose, in the sequel, to discuss them more at length; at present, we exclude them from our discussions, by adopting the following as the fundamental principle of all geological reasoning:—

The phenomena which geology presents to us as objects of physical investigation are to be referred to natural causes, so far as it

can be shown that they would be the necessary consequences of such causes acting under conditions, the former existence of which may be deemed admissible.

Without this principle, geology, we repeat, has no existence as a physical science; but in adopting it, we do not thereby prejudge such questions as those above suggested. The limitation expressed in the preceding enunciation is obviously necessary, if we would draw a line of demarcation between those conclusions of the science which rest on certain, and those which rest on controvertible principles. In addition, also, to the above rule, we must make some assumption as to the nature and action of the natural causes of which we recognise the agency in those remote ages to which geology refers. If researches analogous to those which have been crowned with such complete success in reference to the solar system, should hereafter be made with respect to those nebulæ or clusters of stars which lie in the remoter regions of space, they will doubtless be founded on the hypothesis of the universality of gravitation, and of the laws which regulate the production and propagation of light, heat, and electricity, or of any other physical law which may be necessary in our investigations. And the same invariability which we are prepared to recognise in reference to space, we would equally recognise in reference to time; and would distinctly assert the law, *that all physical causes acting under given conditions are to be regarded as having produced, in all past time, the same effects as the same causes, acting under the same conditions, would produce at the present time.* Thus we assume the constancy of the law according to which different particles of matter attract each other, and also of the laws which govern the propagation of heat through solid and fluid bodies, and of its influence in converting solids into fluids, or fluids into gases. In short, we assume that all physical causes have always acted according to the same laws, and, when acting under identical conditions, with the same intensity.

3. We have been the more particular in the statement of this hypothesis, because it appears to us to have been more or less confounded with another hypothesis—that the earth must have been for an indefinite period of time in a physical state essentially the same as that in which it now exists. To confound these hypotheses is a great error; and, in fact, we had almost said that they are absolutely inconsistent with each other; for it is extremely difficult to understand how the causes of which we recognise the agency in geology, can have continued to operate for an indefinite length of time without changing the state and condition of the terrestrial

mass on which they have been acting. This change, though it may have proceeded for an enormous period with extreme slowness, may have been much more rapid at times still anterior. There are many curves, well known to geometricians, which, if continually prolonged according to a definite law, would ultimately pass off to an infinite distance, and which are so related to certain straight lines (their asymptotes) that though, in their continued prolongation, they constantly approach nearer and nearer to those lines, they can never reach them. The portion of such a curve, lying within certain distances of the point at which it commences, may be *curved* in any degree; but that remoter portion in which the curve approximates continually to its asymptote, becomes very nearly a straight line running alongside the rectilinear asymptote for an indefinite distance. Were we to examine any part of this indefinitely extended branch of the curve, we could only conclude it to be a portion of a straight line of indefinite length, in which there is absolutely no change of direction; instead of being a part of a curved line, in portions of which the direction changes rapidly in passing from one point to another, though in the part under inspection the change is too slow to be recognised by the eye. And so it may be with our planet. However slow may have been the process of change, even during all geological time, it may have been like the tardy change of direction in our curve, in its infinitely extended branch, towards its asymptotic direction. It may be that the earth, instead of having never deviated materially from its present physical condition, has been, and is still, departing from some primitive state widely different from its actual one, and approaching to some ultimate condition to which it can only attain, under the action of recognised physical causes, after an indefinite period of time, though its approximation to that ultimate condition not only is now, but has been for an enormous period of time, so near as to admit of no change the rate of which can be deemed perceptible. We are not now asserting our belief in the one or the other of the views here mentioned—we reserve that point for further discussion—but we do protest against the assumption that either of them is an essential *à priori* truth, as an entire violation of the principles of inductive philosophy, and utterly at variance with the spirit of those investigations which have led us to all true knowledge of nature. The steps of the process in such investigations may be briefly stated.

4. In the earlier stages of a science, the observed phenomena will be little more than so many insulated facts; but when observed with sufficient accuracy, and collected in sufficient

number to be classed in separate groups, the laws which express the relations they bear to each other become apparent. In such sciences as those of astronomy, light, heat, &c., the laws here spoken of are *geometrical* laws. The study of the phenomena thus classified suggests hypotheses as to the physical causes to which the phenomena may be due. So far the process is inductive. Starting with any particular hypothesis, we must then deduce the consequences which must follow in its train, by the most accurate modes of investigation which the subject will admit of. The degree of accordance between the results thus obtained, and the observed phenomena, becomes a measure of the truth of our hypothesis. If the accordance is insufficient, the hypothesis must be rejected; if satisfactory, the hypothesis is admitted, and the *physical cause* of the phenomena is established. This is the deductive part of the process, on the accuracy of which, as well as on the harmony between the observed and calculated results, the evidence in favour of any particular hypothesis will manifestly depend.

The most complete example of this process of reasoning is found in the astronomy of the solar system. Innumerable observations on the planets have supplied the phenomena which their motions present to us. Kepler generalized such phenomena as far as they were then known, by showing (1), that the planets describe ellipses about the sun; (2), that the periods of their revolutions bear a determinate relation to their distances from the sun; and (3), that a radius drawn from the sun to a planet sweeps out equal areas in equal times. The consideration of these laws, combined with those of falling bodies, led Newton to the hypothesis of the gravitation of one particle of matter towards another. The consequences of this simple hypothesis had then to be traced by mathematical calculation; and the accordance thus established between these consequences and the observed phenomena of the planetary motions soon afforded the highest degree of probability of the truth of the hypothesis; and two centuries of the combined labours of astronomers and mathematicians have now established it with the highest degree of demonstration attainable in physical science. And if we would understand the entire excellence of this example of the process of reasoning which inductive philosophy teaches, it must be remarked that it is not merely that the hypothesis of gravitation was thus shown to be consistent with previously observed phenomena, and the geometrical laws which Kepler deduced from them. These laws have been proved to be only *approximate laws;* and the true ones, which are infinitely more

complicated, have been deduced by mathematical investigation from the Newtonian hypothesis, and their exactitude verified by the most refined observations of the astronomer. We have here a perfect example of the combination of observation and theory,—where the former, in the first place, suggests an hypothesis on which the latter is founded; and where theory then takes the lead, and suggests more critical observations, till that perfect harmony is established which affords the final test of all scientific truth. It is in this manner that philosophers have established the theory of gravitation—the noblest generalization which it has been given to the mind of man to conceive in physical science, and one which affords to us at least some glimpse of that high eternal harmony which doubtless pervades all the works of creation.

We have now laid down—we hope intelligibly—the primary principles by which we must be governed in our reasonings in speculative geology. It is not, however, in moral science alone that it is so much easier to frame rigorous rules than to adopt them as imperative guides; in physical science, also, we may too often observe a shrinking from the self-imposed rigour of philosophical rules. The spirit of advocacy and the desire of immediate victory in intellectual contests, may sometimes exercise greater influence over us than the simple love of truth in the search of those truths which are not directly and immediately attainable, and for which we ought to wait with patience and suspended judgment. Sparks of truth may undoubtedly be sometimes elicited by the conflict of opposing advocates, but the spirit of advocacy is not therefore the spirit of truthfulness; and the immediate advantages which may arise from it will generally be small compared with those which flow from that patient spirit of research which is content to subject itself to the guidance of rigid rules of philosophy. In speculative geology, we consider an adherence to these rigorous rules to be especially necessary, because the subject presents so many temptations to run into speculations founded more perhaps on the imagination than on well-digested knowledge. Many of its ulterior propositions, moreover, do not admit of that rigorous demonstration which is attainable in some other sciences—a circumstance which renders a well-disciplined judgment the more necessary, in order to arrive at the best approximation to the truth which the evidence we possess may admit of.

Let us now consider the general arrangement which may be adopted in treating on the science of geology, in accordance with the principles above stated.

5. The first division of the subject will comprise the descrip-

tion of the observed phenomena of inorganic matter, and the arrangement of them in groups, exhibiting the laws by which they may be connected. This constitutes one part of *Descriptive Geology*. Another division will comprise all those investigations and discussions by which we endeavour to connect the phenomena with the physical causes to which they are due. This constitutes *Physical Geology*. The science also includes in its ample embrace another extensive branch—that which treats of the phenomena of organic matter, and constitutes *Paleontology*. Those phenomena which are connected simply with the distribution of organic remains in the different strata in which they are imbedded, may with propriety be included in Descriptive Geology, of which they will thus form the second part; while the descriptions of the remains themselves, the arrangement of them in their appropriate places in the animal and vegetable kingdoms, and all theories depending on the nature and properties of organic life, belong especially to this third division of our subject.

The separation of a physical science into the descriptive and the strictly physical portions is obviously important, and in the more complete physical sciences, as optics and astronomy, is, in most treatises upon them, carefully observed. But even in these sciences the line of demarcation is not always drawn with the utmost rigour. It may frequently, in fact, be difficult to exclude from descriptive details all reference to theoretical deductions; and the very terms of descriptive science are often borrowed from the conclusions derived from investigations which belong to physical science in the above restricted use of the term. It is sometimes more convenient in scientific treatises that it should be so; but this does not diminish the importance of a clear conception of the different branches into which an extensive and complicated science may be divided for the clearer exposition of its objects, its evidences, and its conclusions.

We now proceed to state some of the leading facts, or rather broad generalizations of facts, established by numerous observations, and the conclusions immediately deducible from them. The definite statement and logical arrangement of such generalizations and conclusions, though made in the very cursory manner which our limited space prescribes, may aid the general reader in gaining some definite notion of the scope and objects of geology as a speculative science, and may serve as a guide to the student who may desire a more detailed knowledge of the subject. We shall first restrict ourselves to those points, whether relating to facts or theories, which may be regarded as firmly and finally established; and shall then

discuss some questions of high speculative interest, on which there still remains room for difference of opinion.

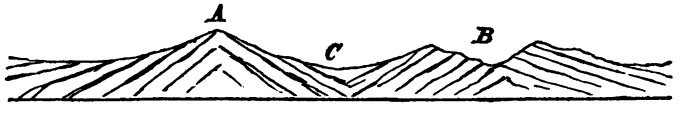
6. The first fact to which we would direct attention is the division of the superficial portion of the earth's crust into two distinct portions—the *stratified* and the *unstratified*. It is the first of these which forms more especially the repository of those numerous documents which record the history of our planet. Its principal mineral constituents are lime, sand, and clay, existing in masses usually more or less intermixed with each other, but, in some cases, almost free from such intermixture, as in the cases of chalk and certain limestones, which are almost entirely *calcareous*, and in certain sandstones, which are almost entirely *siliceous*. These are not irregular masses, but spread out into layers of large horizontal extent. These larger layers are usually subdivided into smaller ones (*strata* or *beds*), not exceeding, perhaps, a few feet in thickness. These subordinate beds frequently differ little, in mineral character, from each other, but are usually easily distinguished by inspection, though, in some few cases, it may require the practised eye of the geologist to recognise them.

The unstratified portion of the earth's crust is distinguished by the total absence of all stratification. In some cases there are planes of separation, termed *divisional* or *structural planes*, which might, at first sight, deceive an inexperienced eye, but which are soon seen to be totally distinct from *planes of stratification*. Its calcareous, siliceous, and argillaceous constituents exist much more in mineralogical combination, the first being in much smaller proportion, and the general structure is far more crystalline than in the stratified mass. Granite may be instanced as one familiar form of unstratified rock.

But there is a far more important and significant distinction between these stratified and unstratified masses. The former contains within it, imbedded in almost every stratum, the remains of organic objects, animals and plants; whereas no trace of such objects is found in the unstratified mass. They comprise great numbers of bones of vertebrate, and shells of invertebrate animals, with numerous remains of zoophytes. The great majority of these remains are completely mineralized, every particle of animal or vegetable matter having entirely disappeared, and been replaced by mineral substances. It is beautiful to observe the exquisite delicacy of the process by which this substitution has been effected, the most delicate characters being as perfectly preserved as in a living specimen. The preservation of the most fragile objects, as delicate shells and stems of corals, is an important fact in reference to the process by which they were originally entombed.

7. The *relative positions* of the stratified and unstratified masses is such that, as a general rule, the former reposes on the latter. Near their surfaces of junction, however, they are frequently dove-tailed, as it were, into each other, by veins of the unstratified mass which penetrate into the stratified portion. In other cases, vertical *dykes* rise like walls through the strata; and in almost every mountainous district similar rocks are found either in large irregular masses, or regularly interstratified between the beds of stratified rock. These facts are highly significant as indicating the primitive state of the unstratified mass.

8. The *positions of the strata* of the stratified mass next demand our attention. We have spoken of them as being in general approximately horizontal; but in numerous instances they deviate more or less from this position, the deviation being more general in the older strata, and usually the greatest in mountainous districts, where the strata become not unfrequently nearly vertical. This inclination to the horizon causes each stratum to rise successively to the surface, and thus enables us to ascertain its mineral nature and organic contents. The angle of inclination is termed the *dip* of the beds. It not unfrequently changes from one direction to the opposite several times within the limits of the same mountainous district, as shown in the annexed diagram, which represents a section in the direction

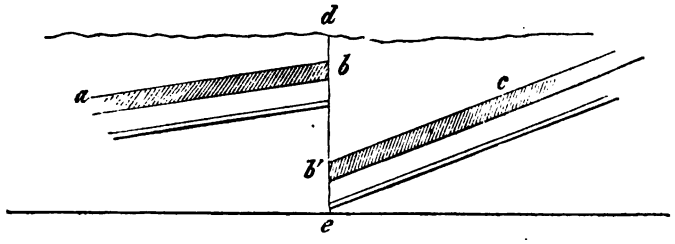


of the dip. Lines through A and B perpendicular to the section are called *anticlinal lines*, and a similar line through C is called a *synclinal line*. Such lines will frequently be continuous and nearly straight for many miles, and often correspond more or less with the external character of the district, in some such manner as indicated by the diagram.

9. It is this inclined disposition of the strata which enables us to form some rude estimate of the thickness of the whole stratified mass in particular localities. It cannot, in many places, be estimated at less than 20,000 or 30,000 feet, and may possibly be considerably greater. It is essential that the geological reader should realize in his own mind the enormous magnitude of the stratified and fossiliferous portion of the earth's crust.

10. There is another kind of discontinuity to which these strata are subject, and which may also be best illustrated by a

simple diagram. In these cases, the whole stratified mass has the appearance of having been dislocated along the nearly vertical plane *d e*, as indicated by the discontinuous stratum



a b b' c. This dislocation is called a *fault*. The displacement *b b'* may not exceed, in some cases, a few feet, while in others it may amount to several hundred feet. In the latter case, the faults usually extend for many miles.

These faults are intimately associated with large deviations of the strata from horizontality. They are almost invariably parallel to the neighbouring anticlinal and synclinal lines, which themselves observe the same *law of parallelism*. One of the most gratifying results of the labours of the field geologist consists in this evolving of law and order amidst the apparent irregularity and confusion usually presented to us in the external features of a mountainous district.

11. The complete evidence of the facts which we have now described in broad outline, must, of course, be sought in the labours of geological observers. When the geological sense, however, is once awakened, we can scarcely cast our eye on a sea cliff, a mountain escarpment, or even a railway cutting, without seeing evidence of some such facts as those above stated. But of all particular localities for a young observer, we would especially mention the Isle of Wight. It might have been cut out by nature for a geological model illustrative of the class of phenomena to which we have been directing the attention of the reader. An anticlinal line runs nearly east and west through the island, meeting the south-western coast at Freshwater Bay, and the south-eastern coast at Culver Bay, at which points the strata, with their fossil contents, are beautifully exhibited at different inclinations, varying from horizontality to verticality. We believe that no one can visit these places for the first time, with some previous knowledge of these geological facts, without having the pleasure which their picturesque beauties are capable of affording much enhanced by a sense of their geological beauty. But the best evidence of all the phenomena of stratification, with

its breaks and discontinuities, is furnished by the operations of the miner, and especially by those of the coal miner. The cupidity of man instigated him to investigate these matters in relation to mining, long before his love of abstract knowledge gave him a higher interest in them; and if any one should for a moment doubt the judgment of the theorizing philosopher, we would refer him to the shrewdness of the practical miner.

12. As regards the arrangement of the fossiliferous, or stratified portion of the earth's crust, geologists are now pretty well agreed, though different writers usually modify it in its minuter details, according to their own views. The following tabular statement of strata in descending order may be convenient for reference. Our limits admit of no details :—

I. Tertiary, or Cainozoic Series of Strata.

1. Post Pleiocene, including those of the most recent, or human period.
2. Newer Pleiocene, or Pleistocene.
3. Older Pleiocene.
4. Miocene.
5. Eocene (London Clay, &c.).

II. Secondary, or Mesozoic Series.

6. Chalk.
7. Greensand (Upper and Lower, with the Gault).
8. Wealden.
9. Upper Oolite.
10. Middle Oolite (Oxford Clay, &c.).
11. Lower Oolite (Bath Oolite, Stonesfield Slate, &c.).
12. Lias.
13. Trias (New Red Sandstone, &c.).

III. Primary, or Paleozoic Series.

14. Permian (Magnesian Limestone, &c.).
15. Coal and Mountain Limestone.
16. Devonian (Old Red Sandstone, &c.).
17. Silurian.*
18. Cambrian.

The following table of the animal kingdom may also be convenient for readers not familiar with zoological classification :—

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* No. 17 is the Upper Silurian of Sir R. Murchison, and 18 is his Lower Silurian. This latter has been separated by several geologists into Upper and Lower Cambrian.

Sub-kingdom *Vertebrata.*
Class Mammalia.
„ Aves.
„ Reptilia.
„ Pisces.

Sub-kingdom *Articulata.*
Class Crustacea.
„ Arachnida.
„ Insecta.
„ Anellata.
„ Cirripedia.

Sub-kingdom *Mollusca.*
Class Cephalopoda.
„ Gasteropoda.
„ Pteropoda.
„ Lamellibranchiata.
„ Brachiopoda.
„ Tunicata.

Sub-kingdom *Radiata.*
Class Radiaria.
„ Polypi.
„ Entozoa.
„ Infusoria.

The first of these sub-kingdoms consists of animals of the highest organization—the last contains those of the lowest. The Articulata and Mollusca are arranged side by side, as having something like an equality of pretension as regards their organization. The last class of either of these sub-kingdoms has no claim to be ranked above the first class of the other. They cannot, therefore, be arranged in linear order. Of the Vertebrata, the mammals, the reptiles and fishes abound; the remains of birds, as might be expected, are more rare. Of the Articulata, crustaceans (now represented by crabs, lobsters, &c.) are in considerable numbers, comprising the various extinct genera of Trilobites which characterised some of the oldest formations. Among the Mollusca, the Cephalopoda (now feebly represented by the cuttle-fish, &c.) were formerly abundant, comprising large Orthoceratites and other similar forms, with the numerous genera of Ammonites, of which the general form will doubtless be familiar to most of our readers. Gasteropoda (univalves), and Lamellibranchiata, and Brachiopoda (bivalves), are exceedingly abundant, as might be expected, on account of the facility with which their shells would be preserved. Brachiopoda are especially abundant in the older formations. Also fossil Radiaria, Polypi, and Infusoria abound.

The highest classes found in the Cambrian beds (as above defined), are Crustacea and Cephalopoda, with numerous fossils of lower classes. In the Silurian division, a few fishes appear,

in addition to the lower classes of animals, of which, however, the *species* are for the most part changed. In the Devonian beds, fishes are very abundant, and reptile life also makes its appearance. In the Coal formation, plants first become abundant. The Lias abounds in enormous reptiles; and in the Lower Oolites (Stonesfield slates) the first mammals (small marsupial animals) appear. In the Tertiaries, large mammals abound, and finally Man was introduced. This recent introduction is proved by the fact of no human bones having been yet discovered in a fossilized state. Of all the *species* of animals now living, it is believed that none are found fossil, with the exception of a few in the most recent tertiary beds.

The brief outline of geological phenomena which we have now given, belongs, of course, to *descriptive geology*—and we might proceed with this department of the subject as far as our purpose might require, before entering on any of those theoretical discussions which belong to *physical geology;* but there are certain elementary propositions which flow so directly as immediate inferences from the preceding facts, and constitute so completely the chief corner-stones of the science, that we think it better to place the facts and the inferences in immediate juxta-position, in order that their relations to each other may appear the more obviously. Moreover, it is to these fundamental propositions of the science that we here wish especially to direct the attention of our readers.

13. Our first proposition, then, is—*that the stratified beds were deposited from water,* and in the same manner as that in which we may so frequently observe earthy sediment to be deposited after being held for a certain time in mechanical suspension in that element. If this deposition take place at a uniform rate, and the matter deposited be always of the same mineralogical character, there will be no *stratification* of the deposited mass; but if the process be discontinuous, or the matter deposited should be at one time, for instance, argillaceous, and at another, arenaceous or calcareous, distinct beds superimposed on each other will be the necessary consequence, and the mass will be stratified, as we actually observe the stratified portion of the earth's crust to be. This is one part of the proof of our proposition. Another, and absolutely conclusive one, is, that almost every stratum of the stratified mass contains the remains of animals, an immense proportion of which may be described as the distinct analogues of those which inhabit the ocean, estuaries, or lakes, at the present time.

14. Our next proposition is—*that the matter which formed these beds consisted of extremely fine sediment, very slowly and*

gradually deposited. The most direct proof of this is derived from the state of the more delicate organic remains. Many of these must have originally been too fragile to bear the slightest violence, and yet are in perfect preservation; while the manner in which they are imbedded demonstrates the fineness of the sediment with which they were originally enveloped. The beds having this character are hence called *sedimentary* beds; and the term is frequently applied to the whole stratified mass, on account of the great predominance of beds of this character. There are some beds, however, which consist principally of rounded pebbles, or other masses of various sizes, which must have had their present forms when first arranged in the existing beds, for it is inconceivable how their forms could have been derived from the subsequent action of any physical causes. These masses, which could only be spread out by comparatively violent action of water, or other powerful agencies, seldom contain organic remains at all, and never those of a delicate structure, in perfect preservation.

15. The two previous propositions are such direct and simple inferences from the facts previously stated, that, the facts being right, the propositions cannot be wrong. Let us next consider the physical causes by which the deposition of fine sediment may be produced. And here we may remark, that *denudation* must accompany and precede deposition. Before a current of water can put down a quantity of matter in one place, it must manifestly take it up from another; and this taking up and subsequent transportation of matter from any locality whatsoever, we term *denudation*. Moreover, since water cannot, at least in a tranquil state, hold sediment, however fine, any considerable time in mechanical suspension; the operations of denudation and of deposition may be regarded as simultaneous operations, the rate of one being an almost exact measure of that of the other. Consequently, since we have shown that the rate of deposition must have been slow, we conclude that the rate of denudation must have been equally so. We have first, then, in this inquiry, to assign a cause which shall have been slowly, but inevitably, operating in past times to produce this effect.

Now, in the first place, so long as the moon has been revolving about the earth, and the earth has been revolving round its axis, and been girdled by its ocean of waters, so long must there have been tides and tidal currents in that ocean; and so long as the ocean has been bounded by terrestrial shores, so long must waves and tidal currents have been engaged in their unceasing work of destruction along those shores, and in the transport of abraded matter to a lower level on the bed of

the ocean. It is true that these currents may have sometimes been employed, as at present, in particular localities, in extending the surface of dry land rather than in wearing it away; but the quantity of matter thus rescued, as it were, from the ocean, is now, and doubtless must always have been, exceedingly small compared with that devoured by it; for the matter thus forming new dry land can scarcely rise above high-water mark, while the denudation is carried on in numerous places by the more insidious process of undermining the foundation of every beetling cliff that fronts the sea, and obliging large masses of it to topple down, broken and shattered, into the water beneath, and thus prepared for the more rapid transport to other localities.

Another cause of denudation and sedimentary deposition has its origin in the solar heat, by which aqueous vapour is constantly raised from the surface of the ocean, to be transported in large quantities by atmospheric currents over the dry land, on which it descends in the form of rain, and returns to the ocean by the rivers it maintains. Here we have another round of operations, which must have existed so long as solar heat has existed with an ocean for it to act upon, and must necessarily have been attended with the transport of matter by rivers from higher levels, and its subsequent deposition in the ocean in the form of *deltas*, to be afterwards, in many cases, more widely distributed by ocean currents. The intensity with which this cause may have acted in past times must have depended on that of the solar heat, and may therefore be considered to have been always much the same as at present,—during those times, at least, over which our geological records extend.

It may, perhaps, be supposed that the double process of denudation and deposition which we have been discussing may have been effected in former periods with greater rapidity by the aid of those great convulsive movements of the land to which many geologists are disposed to refer the apparent dislocation and highly inclined positions of so many sedimentary beds. We may doubtless conceive repeated processes of demolition, transport, and deposition of large quantities of matter, to have taken place in this manner by paroxysmal efforts; but this sudden deposition of materials in large quantities could never form regularly stratified beds, or admit of the regular distribution of organic remains throughout the deposited mass. Such tumultuous transport is utterly different from that which must have accompanied the deposition of *sedimentary* beds, though it may have occasionally aided this latter process by breaking up the

materials, to be subsequently carried off and deposited by the gradual and tranquil operation above described. The demolition of the Shakspeare Cliff, a few years ago, has doubtless facilitated the deposition of a certain quantity of chalk in some other locality; but the denudation we have spoken of is not represented in this case by the immediate effect of the exploding gunpowder, but by the slow process by which the sea is now conveying the mass of chalk thus placed within its grasp to its final destination.

The only immediate causes, then, to which we can refer the formation of the general sedimentary portion of the earth's crust, are those above mentioned; and exceedingly slow as the process may now be, there is no reason whatever for supposing that it can have been much more rapid in past geological ages. The amount of sedimentary matter comprising all the stratified portions of the earth's crust, which must have been submitted to this double process of denudation and deposition, is so enormous, and the causes now in action apparently so feeble, that it is not surprising that their efficiency should have been doubted by many of the earlier geologists; but more careful observation on the formation of deltas, and the destruction of coasts, have proved these causes to be at least more effective than they were formerly supposed to be; and we are not aware that any geologist of the present day would doubt their adequacy, or would dream of referring the phenomena now attributed to them to any other causes. This conclusion is of the first importance in speculative geology with reference to the earth's antiquity.

16. We now proceed to show—*that the original position of these sedimentary beds was very approximately horizontal.*

The proof of this proposition depends much on the observed results of sedimentation at the present time. These may not unfrequently be examined on the margins of lakes, especially if the water has assumed a level somewhat permanently lower than that which it formerly occupied; or in estuaries, at times of very low water; or in flat coasts and districts which have been recovered from the sea by embankments. In all such cases, the perfect regularity and horizontality of the beds are very striking. If Western Europe were to be so elevated as to raise above the surface of the sea the continuous bed of the German Ocean, the English Channel, the Irish Sea, and that of the Atlantic for some miles from our western coasts, that bed would present a vast plane, with few and comparatively small elevations. In fact, in all *shallow seas*, the abrading effects of currents, and the process of deposition itself, must have a constant tendency to reduce the bottom to

an approximately level plane, with the exception of a few grooves and hollows, along which particular currents may set with more than usual force. All sedimentary deposition on such ocean beds must necessarily, therefore, approximate to horizontality. The same reasoning will not equally apply to *deep* ocean beds; but here we are released from any uncertainty, because we are assured that the sedimentary deposition of beds containing many organic remains cannot have taken place at great depths in the sea. It has been clearly established by *dredging*, that the bottom of the ocean, at depths exceeding twelve hundred feet, is almost as perfect a desert, with regard to animal life, as the more elevated regions of our highest mountains. A few insulated creatures, banished perhaps by some accident from the particular region to which Nature had destined them, may be found at greater depths, but it is clear that they do not exist there in sufficiently vivid enjoyment of life to increase and multiply. They form but a meagre and stunted race. But it has also been further proved that, within the limit above mentioned, there are several distinct zones of depth, each characterised by distinct genera and species of marine animals, rejoicing in their own peculiar ocean region. Consequently, if a whole stratum be characterised, as is usually the case, by the same class of organic remains, we are certain that, taking its whole extent, its position must have been almost exactly horizontal, and that the local variations cannot have been considerable, since every part of it must have been deposited at nearly the same depth.

These considerations are the more important, on account of their applicability to all strata characterised by the remains of animals which must have existed on any ocean bottom where deposition was taking place. We have spoken generally of the stratified superficial portion of the earth as being *sedimentary;* but it should be remarked, that certain calcareous beds seem to have been formed by a simple aggregation of the *débris* of molluscous and zoophyte animals, thousands of generations of which, according to our geological statistics, must have lived and died and been entombed in the places in which their remains are now accumulated. Such beds sometimes present scarcely any appearance of sedimentary matter as a matrix for the imbedding of the organic contents. Still the previous reasoning equally proves the original horizontality of the strata in question.

We must not, however, omit to mention one very curious exception to the above conclusion, that the entombment of organic remains cannot take place on deep-sea bottoms. It has been most strikingly illustrated, by the soundings which

have been made for the purpose of laying down the electric cable across the Atlantic, where it has been discovered that the sea bottom is covered with a stratum of unknown thickness, formed entirely of the microscopic shells of Foraminifera. Myriads of these little animals must probably have existed in the sea water, and left their shells, after death, to subside to the bottom, where they have now been discovered at the depth of 10,000 or 12,000 feet. A large portion of the mass of the chalk has been long known to consist of an enormous aggregation of these Foraminifera, and consequently any extended portion of that formation, not containing the remains of larger marine animals whose *habitat* must have been the sea bottom, may have been formed at much greater depths than other beds of the general stratified mass. The chalk, however, usually contains an abundance of such remains, and our previous reasoning must consequently be generally applicable to it.

17. Having thus shown that the beds of the stratified portion of the earth's crust must have been originally horizontal, we must compare their original with their actual positions. It is in doing this that the geological observer first recognises the mighty works which have been done over such extensive areas of the earth's surface. We are so much accustomed to regard the earth as the type of all that is steadfast and immovable, that it is with difficulty we realize to ourselves the convulsions to which she has been subject, and the mighty throes which have literally given birth to giant mountains. This is no exaggerated language. But let us turn to the simple and immediate inferences from the preceding propositions, which assert the deposition of sedimentary beds at the bottom of the oceans of comparatively small depth, in a very nearly horizontal position. And first we assert—*that most of these beds must have descended very slowly after their formation, beneath the level at which they were deposited.* This descent must have extended, in many cases, to several hundreds of feet, and not unfrequently to many thousands. This follows immediately from the well-established fact already stated, that the depths of the ocean zones in which marine animals rejoice to live do not exceed a few hundred feet; for we observe in numberless cases, that stratified fossiliferous beds are piled on each other, their planes of stratification being parallel, so as to form a mass of which the aggregate thickness is much greater than the depths at which the animals entombed in them could have lived and flourished, so that the lower portions of these beds must have gone down to their present depths after their deposition. Suppose, for example, this

thickness to be 5000 feet, and that the animals whose remains are found in the lowest beds might have lived at the depth of 500 feet; this must therefore have been about the depth of the sea-bottom at the time of the deposition of this lowest stratum of the mass. But also, the same depth of 500 feet, or one not differing materially from it, must, for the same reason, have been the approximate depth of the sea when any higher bed in the series was deposited; and thus, as the continued deposition tended to fill up the ocean-basin, its bottom must have slowly descended, so as to preserve the depth of the basin approximately constant. It is quite certain, therefore, that large areas of the earth's surface have been subjected to a gradual depression, the rate of which must be measured by that of deposition over the same areas. It must, consequently, have been almost inconceivably slow, and have continued for almost countless ages.

It follows as a corollary from this proposition, *that every area of long continued deposition must have been an area of slow continuous depression.*

18. The next proposition is—*that by far the greater portion of the earth's surface which now constitutes dry land, must have been raised above the level at which it was originally formed;* for wherever a marine fossiliferous bed forms the existing surface, the proposition is manifestly true, since that bed must have been deposited at the bottom of the sea.* In many cases, also, a descending movement must demonstrably have preceded the ascending one. For on reference to the preceding diagram (8) it is easily seen that the edges of the strata which are, in a geological sense, the lowest in the series, are actually found at the greatest height above the sea level; but these same strata, if they have a sufficient aggregate thickness of strata above them belonging to the higher part of the series, must, from what has been already proved, have gradually descended from their original position during the deposition of the superincumbent beds. Hence the earth's surface must, in many parts, have been subject to at least one movement of depression, and another of elevation. In many cases, moreover, it can be distinctly proved, in a similar manner, that certain parts of the surface have been subject to several oscillations of this kind; and many more may have occurred than those of which distinct records have been preserved.

Few persons unacquainted with geological facts and in-

* It may be remarked that when we speak geologically of elevation and depression, the sea level at the time referred to must be understood as that from which height and depth are measured.

ferences can for the first time hear it asserted that the ground they stand upon, however small its elevation may be above the surface of the sea, was once merged far beneath it, without a strong feeling of astonishment, and would probably receive with perfect incredulity the assertion that the oscillating motion above spoken of had in some instances extended through four or five miles of combined vertical depression and elevation; and yet no conclusion of science is more certain. In the Himalaya mountains, there are fossiliferous beds at the height of 14,000 or 15,000 feet, and in the Alps at 8000 or 10,000 feet; and these must have once been we know not how deep beneath the surface of the sea. The conclusion is a startling one for a mind not accustomed to such views, but one which claims our assent on grounds scarcely inferior to those on which we trust the best conclusions of astronomy.

19. But what physical causes can be assigned of sufficient mechanical energy to produce these mighty movements? We reply, that modern volcanic eruptions indicate the former existence of an adequate power. They must be due to the intumescence of fluid lava, produced by the expansion of elastic gases within it. This expansive power is indicated by the violence with which the ejected matter is frequently expelled from the volcanic vent; and we know not what it would become if the vent did not exist, and the gases continued to accumulate. A power might then be produced sufficient to raise the loftiest mountain on the earth; and to this cause we do not hesitate to refer such elevations. Other causes have also been suggested, but it is not here our object to discuss them. They would not preclude the action of the cause above mentioned, which, we maintain, is *alone*, independently of other causes, sufficient to account for the phenomena in question.

But are there no phenomena which afford positive evidence that elevations of different portions of the earth's surface have been produced by the intumescence of internal masses of molten matter, as here supposed? We answer, that there is scarcely a mountain that will not testify to the truth of this theory. The strata of mountainous tracts are, without exception, very much disturbed from their primitive horizontality, and are generally much broken and dislocated; and, moreover, it is here we find the phenomena before described, of unstratified masses wedged and dovetailed into adjoining masses of stratified rock, or protruding through them. These would manifestly be the necessary consequences of subterranean forces like those we are contemplating.

It is from theoretical views of this kind that all this injected

or ejected matter is termed *igneous*. It assumes different mineral characters in different cases, being, in some places, granitic; in others, basalt, greenstone, &c. Its general appearance is entirely different from that of sedimentary rocks. In many cases, also, as above stated, the veins, dykes, &c., of injected matter can be traced to the general unstratified mass on which the sedimentary beds repose; thus proving that that mass, also, must necessarily have been in a state of fluidity, as well as the injected portions proceeding from it. We have thus the most positive proof that a large portion of those unstratified rocks which fall under our immediate observation were once in a fluid state, or that they are of igneous origin.

20. In the preceding exposition, it has been our object to bring before our readers, in as condensed a form as possible, and independently of subsidiary details, the leading facts and conclusions of geology. The facts are as firmly established by observation, and the conclusions are so clearly and demonstrably deducible from them, that no rational mind can, we conceive, refuse its assent to them when it is intimately acquainted with the subject, and is prepared to admit the principle on which geology, in common with all physical science, must rest—that geological phenomena must be referred to physical causes, so far, at least, as those causes are sufficient to account for them. Admitting this principle, the preceding propositions are as strictly demonstrable as those of any other physical science. As a brief summary, we may state them to be,—that the stratified and fossiliferous portion of the earth's crust is filled with the remains of organic life—that it was deposited with extreme slowness from water, the original position of the strata having been at least approximately horizontal—that this mass, in many localities, may be five or six miles in thickness—that the agencies by which its transport and deposition were effected, were similar to those now in operation, and not varying from them materially in intensity—that long continuous deposition was accompanied by an exceedingly slow and, at least, nearly continuous depression of the bed of the ocean on which the deposition took place—that many such depressed masses have been subsequently elevated into the upper regions of the highest mountains—that those elevations, at least, by which the strata were most raised and dislocated, were produced partly, or entirely, by the intumescence of a mass maintained by heat in a state of fusion, and thrust into the crevices of the superincumbent mass, or ejected through its fissures over the external surface—and that the unstratified portion of the

earth's crust, as far as we are acquainted with it, may be considered as rock, formerly in a state of fusion, but subsequently rendered solid by its refrigeration.

When the geological student is sufficiently familiar with these propositions, he will be prepared to follow the discussion of the less elementary problems of the science, many of which still remain subjects of controversy. Such, however, is no longer the case with the next point to which we shall direct the attention of our readers—the antiquity of our planet. The unanimous conclusion which all geologists have arrived at on the question, is sufficient to place geology by the side of astronomy in reference to the interest which it is calculated to excite in every speculative mind. Admitting the propositions above stated, let us turn to our evidences.

21. We have seen that the successive strata which form the enormous mass of the stratified portion of the earth's crust are not only filled with organic remains, but that each succeeding formation, comprising a number of strata, is characterised by a certain group of such remains, nearly or totally distinct from those of preceding formations; and thus it is proved that an immense number of species of different tribes of animals have had their abodes on the surface of our planet, have given their passing phase to terrestrial life, and have disappeared and given place to new tribes, to be succeeded by others in like manner when the tasks appointed to them by their Creator had been accomplished, and Man, at last, appeared upon the scene. It is, perhaps, the paleontologist alone who can appreciate the full force of this argument for the antiquity of the globe, watching, as it were, the multitudes of species which pass in succession before his mental eye, as they come and pass away for ever. And yet so slow is this transition, according to the present order of nature, that there is not the slightest evidence of the introduction of a new species of animal since the creation of man; and even admitting that, in the desert places of the earth, or in the unknown depths of the ocean, where nature works in secret, the introduction of new species may now be in progress, still, judging from all we know of the vegetable and animal kingdoms, it is impossible not to be deeply impressed with the conviction of the enormous period of time which would be required, according to the existing order of things, for all the animals and plants which now occupy the face of the globe to pass away, and be replaced by others of totally different species. And it must here be remembered, that the races which have thus disappeared do not consist merely of the analogues of those of which the *habitats* are now secluded

from our daily observation, but animals also of the same classes as those with which man is at present most intimately associated. Within what period may it be presumed that, in the course of nature, not only our oysters and cockles, our crabs and lobsters, and cod and salmon, but our sheep, and our horses, and oxen, will have passed away, to be replaced by others, not one of which, perhaps, shall trace back its progenitors to the present generation? Yet similar transitions have taken place in the higher orders of animals, and in the latest periods of geological history; while numerous changes of the same kind in the lower tribes of animals are amongst the best authenticated facts of geological history. Who shall venture, then, to measure the periods which the Almighty has assigned for these marvellous revolutions in the animal and vegetable kingdoms, by which even nature's dynasties have been so completely swept away?

22. But there is another argument in favour of the antiquity of our globe, drawn not from the animate but from the inanimate creation, and which appears to us more demonstrably conclusive than the one just stated, because it depends on facts more determinate, and principles with which we are better acquainted. It might possibly be objected to our former argument that we are but little acquainted with the principles which govern animate matter, and that, after all, the changes we have mentioned, in organic life, may have required less time than our imagination or even our cooler judgment might be inclined to attribute to them. The same objection cannot be urged against our knowledge of mechanical laws, and the action of mechanical causes; or, with anything like the same force, against our general knowledge of the laws which govern inanimate matter. We have already explained why the deposition of sedimentary strata, and that process of denudation which must necessarily have been contemporaneous with it, must have proceeded at very much the same rate in former as in recent times; and, admitting the conclusion, we obtain at once something like a rough conception of the enormous lapse of time necessary for the deposition of the whole mass of sedimentary formations, by simply comparing this mass with that which has been transported and deposited within the last two or three thousand years. Now, during that period, much more has doubtless been effected than has been noted by any records. Waves have been constantly lashing and abrading the sea-coasts, and rivers have been unceasing in bearing their burdens of sediment to the ocean, the currents of which have been as constantly engaged in its transport and deposition as the aërial currents are in the transport of vapour and its

deposition as rain. Still, estimating the work thus performed at its utmost amount, how insignificant must it be! The lines of coast, the masses of the mountains, or, generally, the physical geography of the globe, can hardly be said to have been sensibly changed. Egypt and the Land of Canaan, Mount Horeb and the shores of the Red Sea, the hill-country of Judea and the coasts of Palestine, all remain as so many witnesses to the exceedingly small progress of waves and rivers in their inevitable work of destruction since the earliest periods of recorded history. How long, then, would the same agencies require to wash away the whole existing dry land, and deposit it beneath the surface of the ocean? It may seem a wild question to ask; and yet, if this were effected, it would not probably amount to one-twentieth part of what has been done by similar agencies within those periods of which we possess the most indisputable geological records. The question is reduced to the rule of three; and though the numerical values of all the terms may not be accurately attainable, they may be estimated to a sufficient degree of approximation to give us a perfect conviction of the enormous period during which our globe has been in a state not very different from that in which we now behold it.

23. Particular cases of deposition have sometimes been considered, with a view of estimating the time which must have been necessary for the deposition of certain limited masses of sedimentary matter. It has been estimated, for instance, that the delta of the Mississippi must have required for its formation at least some 60,000 years. Such results are of great interest, though they must necessarily be vague. More exact geological chronometers, if we may use the expression, might be established, though on a much smaller scale, by estimating the quantity of matter which has been deposited at the heads of many of our lakes, and the amount of sediment annually carried into them. Observations of this kind would be extremely interesting, and would convey to us a more definite idea than any other of the time during which the present configuration of the earth's surface has existed in each particular locality. The great time-piece, however, by which we must endeavour to measure geological periods, must be formed from the whole aggregate mass of sedimentary matter which forms the stratified portion of the earth's crust. Even this will always give a result *too small*, because large portions of this mass have undoubtedly undergone more than once the process of transport and deposition.

24. Geology has frequently been spoken of as a vague and indeterminate science. We maintain, on the contrary, that

all the propositions which we have now considered are clear and determinate. They constitute the immovable foundations of a science which, with the exception of astronomy, has exercised more influence than any other on the convictions of mankind respecting the economy of the material universe. Conceive all the preceding propositions to be received with general incredulity instead of being received with that belief which nearly all persons of intelligence now feel in them, and then we shall be sensible of the addition which geology has made in a few years to the general stock of human knowledge. There may be much that still remains uncertain in the science; but when we approach the boundaries of human knowledge, and to those limits either in time or space beyond which man's observation cannot extend, we necessarily approach the regions of doubt and uncertainty. The preceding geological propositions may be compared to the portion of astronomy which belongs to the solar system, where no uncertainty exists except on minor points. But in stellar astronomy almost every question may be said to be involved in obscurity, and in much greater, and, it may be, in more hopeless doubt than many of those geological questions on which differences of opinion still exist. Some of these will perhaps ever remain matters of controversy; but with respect to many others, though it may not be possible to obtain demonstration, there is little doubt but that philosophers will ultimately arrive at those general convictions which, in such cases, must be regarded as the surest attainable tests of truth.

25. The history of the globe presents to us a continual struggle between two antagonistic operations,—that of denudation, on the one hand, by which matter is continually carried from higher to lower levels; and that of elevation, on the other, by which the opposite effect is produced. Had the former of these alone existed, the whole terrestrial surface would have formed the bottom of an ocean extending over the whole globe, but the contrary process of elevation seems to have preserved some approximation to a steady ratio of the extent of dry land to that of the sea. The questions above alluded to as still being matters of controversy, so far as they are physical and not paleontological, are comprised almost entirely in those theories which profess to explain in detail the causes of denudation and elevation, and the manner in which they have operated in reference either to particular districts, or to the surface of the earth in general. They have been termed *Theories of Denudation*, and *Theories of Elevation*. To the former may be added all investigations

respecting the power of currents of water to transport, not merely fine sediment, but blocks of considerable dimensions, and also the discussion of the modes in which terrestrial masses may have been transported and deposited by glacial and floating ice; and to the *Theories of Elevation* we may add all investigations respecting the nature and origin of existing volcanos. In the paleontological department of the subject we have also theories respecting the succession of organic remains—their distribution, the origin of new species, their diffusion from specific centres, with many other questions of like nature. But on all these questions, and many others, we profess not to touch even in the most cursory manner, except so far as it may be necessary to do so in the discussion of two of the principal speculative questions to which the study of geology naturally conducts us, and to which we propose to devote the remainder of this essay. The claims of the science to be our guide in such speculations depend, it should be observed, on those fundamental propositions which we have endeavoured to state as explicitly as possible, and not on those more doubtful theories of which we have just spoken. If we would form a just estimate of geology as a physical science, we cannot discriminate too carefully between its more certain and its more doubtful propositions.

26. One of the speculative questions which we propose to discuss is—Whether we find distinct evidence of a *progressive* change in the physical condition of the globe; or whether such changes as we may recognise in past times are only recurring *periodical* changes, sometimes taking place, as it were, in one direction, sometimes in another, so as not to alter what may be termed the *mean* condition of the earth, but so as to leave it, during all past time, in a physical condition not essentially differing from that in which it now exists? Our most distinguished geological writer at present has been the leading advocate of this latter theory, while others have maintained the opposite theory of the progressive change of our planet from a primitive to its actual state. This latter has been termed the theory of *progression*, the former that of *non-progression*. The advocates of the latter theory, we may add, have sometimes also been designated as *uniformitarians*.

Again, we have seen that whole tribes of plants and animals have, at different times, disappeared from the face of the earth, to be replaced by others specifically distinct from those that preceded them, till man himself at last appeared on the scene. The leading question to which these facts necessarily conduct us has already been spoken of (2)—Is the introduction of these new orders of organic beings to be referred to

any cause which can properly be included in those secondary causes which, in their operations and effects, constitute what we term *nature*, in the usual acceptation of the term; or are they to be referred to some higher order of causation, which may be best represented as a more immediate act of Creative power? This is the other question to which we would direct the attention of our readers.

In the discussion of these questions, and especially in that of *progression* and *non-progression*, it will be essential to enter upon other collateral physical questions, which, in themselves, form important points for investigation. The great and all-pervading physical agent, to which changes of the earth's condition are due, is *heat*. It is heat which vaporizes the waters of the ocean, and lifts them above the mountain tops, thence again to descend laden with sediment to their native bed; and to the same cause we must trace the winds which raise the waves, and give to them their power to undermine and cast down the loftiest cliffs. A large part of denudation is therefore due to this cause, while it is to heat alone, under any view of the subject, that we can possibly assign the agency by which continents and mountains have been elevated. And not only has heat been thus active in the great physical operations which have so wonderfully modified, from time to time, the face of the earth; we can also trace its more direct, though milder influences, in the changes of climate which have taken place in certain regions at least, and probably in others, and of which geology bears no doubtful evidence. Before we proceed, therefore, to the discussion of the questions above suggested, we shall give a brief outline of the phenomena of terrestrial heat, and of the results at which mathematicians and experimenters have arrived, and the theories which geologists have advocated respecting it.

27. In the first place, let us consider the temperature of the terrestrial mass beneath its surface, at those depths to which man has been able to penetrate. Within a depth, varying in different localities from about fifty to eighty feet, the change of temperature from one season of the year to another is sensible, but becomes less as we recede from the surface, till, at the depth above-mentioned, it becomes so small that a thermometer placed at that depth indicates the same temperature at all seasons of the year. It will be seen at once that the variation of temperature at smaller depths is due to the solar heat, which penetrates to this limiting depth, making the temperature of the mass at any given smaller depth greater than the *mean* temperature at that depth during half a year, and less during the other half. Also, the temperature at the limit-

ing depth exceeds by about one degree the mean annual temperature of the ground just below the surface, and that of the atmosphere just above it.

But the point with which we are immediately interested is the law of temperature below the above limiting depth, varying, as above stated, from fifty to eighty feet. Let us designate a point at this depth by the letter A, and any point at a greater depth by B; then the temperature at B, like that at A, will remain unchanged during the whole year; but this constant temperature at B will exceed that at A, and (omitting local and minor variations) by a quantity proportional to the vertical distance of B below A. This conclusion has been established by the observed temperature of mines, and that at the bottoms of artesian wells. The *rate* at which the temperature increases as we descend, varies considerably in different localities, where the depths are comparatively small; but where the depths are great, we find a much nearer approximation to a common rate of increase, which, as determined by the best observations in the deepest mines, shafts, and artesian wells in Western Europe, is very nearly 1° F. *for an increase in depth of sixty feet.*

28. Let us now consider the changes of climate which have taken place at different periods, so far as they are indicated by geological phenomena.

Every one is acquainted with the full development of tropical shells, their magnificent colours and size, as compared with shells from colder regions. It is not merely that the species are usually altogether different, but there is also a difference in the general *facies* of two groups selected respectively from a warm and a cold climate, by which they may be distinguished, independently of a knowledge of the specific forms by which they might be recognised. Thus it is, that though the fossil shells in any but the most recent formations are specifically different from those now existing, yet in their general characters they may bear so much stronger a resemblance and analogy to the existing shells of some particular climate than to those of a very different one, that the paleontologist seems fully justified in referring them to a climate similar to that in which their recent analogues are found. Similar remarks apply with still greater force to plants than to animals. Proceeding on this principle, we find distinct evidence of considerable changes of climate during past geological ages. One most remarkable testimony of this kind is afforded by the plants of our coal fields. The Coal formation belongs, as we have seen, to the latter part of the paleozoic period, the first of the three great periods of geology. Coal

itself is formed almost entirely of vegetable substances, and great numbers of fossil plants are found associated with it. The general aspect of this fossil flora bears so strong a resemblance to the existing floras of the tropical or semi-tropical regions, that botanists have not hesitated to refer it to a climate which, if not exactly tropical in its character, must have been at least a warm, moist, and comparatively equable climate. Now, the coal formations in North America extend to Melville Island, or nearly to the parallel of 70° of latitude, where the present climate is so entirely different from the one just described; and yet large ferns of an arborescent character are found fossilized in the Coal formation of these very high latitudes, where nothing of the kind could exist at the present day. Formerly, similar facts were accounted for on the hypothesis of the materials of which the coal beds were formed having been drifted by currents from distant localities; but the fact that at least a large portion of the plants found in these beds must have grown on the spots which they now occupy, is at present so well established, that there appears to be no possibility of evading the conclusion, that in those regions of Europe and America in which coal of the Carboniferous period is found—and especially in the more northern of those regions — the climate was warmer and more equable towards the conclusion of the paleozoic period than at present.

As we advance into the secondary, or mesozoic period, the fossil shells and corals are still considered to testify to a warmer European climate than that which we enjoy at present. The same may be said of the commencement and some later portions of the tertiary period.

29. From the time of the Coal formation to that of the very recent tertiary beds, there appears to be no distinct evidence to show whether the general change of climate was, or was not, accompanied by *oscillation* of temperature; but when we arrive at the tertiary period alluded to—the glacial period—we find a new species of evidence, which from its unambiguous character, and the nature of the phenomena established by it, is of the first importance. It proves that the temperature of a large portion of Western and Northern Europe must have been, during the period in question, considerably lower than at present, and consequently considerably lower also than that of preceding periods. A large oscillation of temperature is thus established in reference to this particular region.

It is difficult to convey a distinct conception of the force of the evidence on which this conclusion rests, to any one who has not studied it for himself. It may literally be asserted

that Nature has recorded the fact of the former enormous extension of glaciers in a few apparently illegible scratches, graven on the rocky tablets on which so much of the earth's history has been written. These scratches consist of fine parallel lines, and broader grooves on the polished surface of rocks in certain localities. They are exactly such as any one would conceive to be produced by the continued sliding of heavy masses over the rocks in question. These masses are supposed, according to the Glacial theory, to have been ice, descending as glaciers from the higher parts of the mountains along the valleys in which these glacial scratches are found. They are discovered chiefly in mountainous districts and in places where, if glaciers existed at all, they would be most likely to scratch and groove the rocks in the manner observed. But how could glaciers possibly exist at levels little above the sea-level, and in the climate of Western and even Southern Europe, where these scratches have attracted so much attention? We confess that the difficulties of the Glacial theory appeared to us so great in the first instance, that it was only by an examination of the existing Alpine glaciers that they could be removed. That examination soon satisfied us, beyond all question, of the great extension, at some former period, of those glaciers, and of the former existence of glaciers in localities where they are no longer found in that region. Moreover, with our minds thus prepared to interpret similar evidence in other regions, we cannot fail to come to the conclusion that glaciers formerly descended from most of the mountains of Northern and Middle Europe.

We may also add, that existing glaciers are usually laden with blocks of rock which have fallen upon them from the neighbouring precipices, some of them being exceedingly large. Similar blocks are frequently found in the lower parts of the valleys of mountain ranges, where they have doubtless been transported by glaciers sometimes to great distances from their natural abodes, which, in many instances, are easily discovered. They also exist, scattered over the surface of Northern Europe and North America, in places where it is impossible to conceive the former existence of glaciers, and at great distances from any rocks from which such blocks can have sprung. Their transport may, in some cases, have been aided by other causes; but there can be no doubt, as regards the larger blocks, of its having been effected by *floating* ice, while the regions in which they are found were merged beneath the surface of the sea. Numerous facts of the same kind have recently been observed by Arctic and Antarctic voyagers.

The general period of these erratic blocks is the glacial period; and if to this we add the fact that the fauna of the same period, in these regions, bears a decidedly Arctic aspect, we may assert that the proof of a descending oscillation of temperature in Northern and Western Europe is complete.

30. Before we enter upon the theoretical discussions founded on the phenomena above described, we must notice the circumstances of the earth's form and density, and certain astronomical phenomena which result from them. The form of the earth, instead of being exactly spherical, is somewhat compressed at the poles into what is termed a *spheroidal* form, in consequence of which its polar radius is less than its equatorial radius by rather more than thirteen miles. The equatorial region may, therefore, be described as protuberant, and the polar region as flattened. The mean density of the earth is found to be greater than its density near its surface — showing that the density increases with the depth below the surface, as might be expected on account of the greater pressure to which the terrestrial mass is subjected at greater depths. The ratio which the mean density bears to the superficial density has been determined; and though the determination may not aspire to great accuracy, it may doubtless be depended upon as an approximation to the true value. Again, the form and density of the earth are intimately connected with the astronomical phenomena of the *precession of the equinoxes*, and a small irregularity in the moon's motion, neither of which would have any existence if the earth were exactly spherical, and the density were such as to be the same at all points equidistant from the centre. The precession of the equinoxes depends on a slow continual change which takes place in the position of the earth's axis, the line joining its north and south poles. It may be well to describe these phenomena somewhat more fully.

The earth's axis is at present directed to a point in the heavens near to the star Polaris. This point is the exact north pole of the heavens; and in considering it with reference to periods of time not exceeding many years, we usually speak of it as a *fixed* point. This, as we have just intimated, is not strictly correct. The pole moves very slowly, so as to describe very nearly what is called a *small circle* in the heavens. It may be easily traced on a celestial sphere, by drawing upon it a circle through the pole, and parallel to the *great circle* which represents the ecliptic, or that in which the sun appears to move among the stars in the course of each year. This

small circle, and the motion of the pole along it, are such that in 12,000 or 13,000 years the pole will be distant from the present pole-star by more than 40°; but in some 25,000 years it will have returned to the point in the heavens which it now occupies. Thus we see that the present distinction enjoyed by Polaris is but a transitory one, which in a few centuries will pass away, with the certainty, however, of returning after the period just mentioned. A further reference to the celestial globe will immediately show that this motion of the earth's axis, or pole, will necessarily superinduce a corresponding motion of the equinoxes along the ecliptic. This motion is about 50″ a year, and is in a direction opposite to that in which the signs of the Zodiac are reckoned; and, consequently, the sun, after leaving either equinox, returns to it again in less time (by about twenty minutes) than if the equinox had remained stationary. This is *the precession of the equinoxes.*

The motion of the earth's axis, and corresponding motion of the equinoxes just described, may be stated, in general terms, to depend on the attraction which the sun and moon exert on the protuberant portion of the earth about its equator; and as the attraction between two masses must necessarily be reciprocal, the protuberant equatorial mass attracts the moon, and causes her motion to be slightly different from what it would be if the earth were spherical instead of being spheroidal. This is the irregularity, or *inequality,* as it is termed astronomically, in the lunar motion above spoken of. In addition to this general explanation, it should be stated that both these phenomena, the precession and the lunar inequality, depend not only on the equatorial protuberance, but also on the law of density of the earth's mass.

The phenomena which have now been described—the interior temperature of the earth, the higher climatal temperature of early geological periods, the lower temperature of the glacial period, the earth's form and density, together with the astronomical phenomena of precession, and the corresponding inequality in the moon's motion—these must all be accounted for by any complete geological theory. Let us now proceed to theoretical considerations.

31. In the first place we may remark, that the spheroidal form of the earth could not fail to suggest the idea of the earth's mass having been formerly in a state of fluidity, a state to which no conceivable cause but excessive heat could reduce it. This was not necessarily, according to this view of the subject, the earth's *primitive* state, but an antecedent state

through which it must have passed before any part of it became solid. Moreover, the observed increase of temperature in descending beneath the earth's surface suggested the notion of a central incandescent nucleus still remaining in a state of fluidity from its elevated temperature. Hence the theory that the whole mass of the earth was formerly a molten fluid mass, the exterior portion of which, to some unknown depth, has assumed its present solidity by the radiation of heat into surrounding space, and its consequent refrigeration. It should be remarked, that no supposition is here made as to the state of the earth anterior to its assumed state of fluidity, or as to what may be properly termed the *primitive* state of the matter composing it.

This hypothesis of the former incandescent state of the whole earth, and the possible present incandescence of its interior portion, may appear, at first sight, so inconsistent with the actual firmness and temperature of the solid ground on which we tread, that it is likely to excite a feeling of incredulity in the minds of those who have not become familiar with the idea. But this is a prejudice of which the mind must clear itself before it can judge with fairness and equity, as it were, of the hypothesis, so far as to admit it to an impartial trial. The question is, whether the hypothesis be really consistent or not with what we know of the present state of the earth and of its past history. If we find that this question can be answered in the affirmative, we must admit the legitimacy of the hypothesis; and moreover, if it will enable us better than any other to account for observed phenomena, we are bound in philosophical justice to admit the theory founded upon it, notwithstanding any *à priori* prepossession we may have entertained against it.

Assuming, then, the truth of our hypothesis, we must trace the consequences to which it will necessarily lead. And first, as to the *form* which the mass would assume when rotating about its axis, as at present. It is easy to see that it would bulge out in its equatorial, and be flattened in its polar region; but it is for the mathematician to tell us *how much*, under given conditions, the equatorial would thus be made to exceed the polar diameter. In like manner, it is easy to see that, under probable conditions, the *density* of the mass would be greater nearer the centre than at the surface; but it is only by mathematical investigation that we can ascertain anything respecting the *law* of this increase. Again, in the process of time solidification of the exterior portion would take place, and there would be a motion of the equinoxes, as above explained (30), the amount of which would depend essen-

tially on the earth's form and density, as would also the small but well-determined inequality in the moon's motion, already alluded to (30). Now, these problems have all received the careful attention of the most eminent mathematicians, and have been solved with all the accuracy that such problems will admit of. On the one hand, we know by the most refined admeasurements the ratio of the earth's polar and equatorial diameters; the earth's mean density is also approximately known (as above intimated) by the experiments of Cavendish, Bailey, and the Astronomer Royal; and the motion of the equinoxes and the above-mentioned inequality in the moon's motion have been ascertained by observation with great accuracy. Are these results of the most careful observation in accordance and harmony with those deduced by the mathematician from the hypothesis of the earth's former fluidity? The answer is clear—the accordance is perfect, allowing always for those small errors which must necessarily be involved in researches of this nature. We have thus as strong a proof of the truth of our fundamental hypothesis as this mode of investigation can supply.

32. Before we proceed to trace the *thermal* consequences which must result from the truth of our hypothesis, we may state that other attempts have been made to account for the earth's spheroidal form, involving the hypothesis of the *primitive solidity* of the terrestrial mass. But such hypotheses involve the supposition of the earth's original form having been not very different from its actual spheroidal form, which it is supposed to have afterwards assumed by the action of centrifugal force and that of superficial denuding agencies, of which the constant tendency is to level down protuberances and fill up depressions below the sea level. Hypotheses of this kind also necessarily involve particular suppositions respecting the earth's primitive density. We do not consider such theories to merit detailed notice; but we wish here to point out especially the inconsistency of restricted hypotheses of this kind with the fundamental principle which we have laid down for our guidance in these speculations—that all natural phenomena are to be referred to secondary causes, so far as those causes can account for them. The earth's form and the law of its density are phenomena to be thus accounted for, as much as the law of stratification of the sedimentary portion of the earth's crust, or any other observed phenomenon. Hypotheses like the above leave no possible means of accounting for either of these phenomena by secondary causes, and so far cannot be admitted in opposition to another hypothesis which does account for them. If, however, we

should admit any such restricted hypothesis at all, the best of those which involve the earth's primitive solidity would be that which assumed its actual spheroidal form as its primitive form, and its actual density as its primitive density. Though no physical *cause* would thus be assigned for these phenomena, we might still, on the doctrine of *final causes*, assign at least a *reason* for the spheroidal form, as the only one admitting of the mixture of ocean and dry land on every part of the earth's surface. But here, again, we may ask, why is the actual state of the superficial portion alone of the terrestrial mass—that which lies within the reach of observation—to be referred to the action of secondary causes? We do not see how those who assume the earth to have been created solid, with its present form and density, rest on much better philosophical grounds than Chateaubriand when he asserted his belief in the existence of old crows'-nests like those of a preceding year, in the first spring that ever dawned upon our planet.

We have thought it important to notice thus far these restricted hypotheses, as they are connected with the great speculative question of *progression* or *non-progression*, which, in fact, now divides speculative geologists into two parties, according to the view which they take of it. If the terrestrial mass were formerly fluid from excessive heat, *physical progression*, from its former to its present condition, must have been the order of nature on our globe, and the illustration above given (3), by means of a curve which constantly approximates to an asymptote, will afford a true representation of the progressive change which the earth has undergone. It is in the maintenance of the opposite view that the theory of the former fluidity of the globe has been opposed, and that of its primitive solidity has been advocated.

33. We have seen how perfectly the theory of the earth's former fluidity accords with its form and density, the precession of the equinoxes, and the corresponding inequality in the moon's motion. Let us now trace the *thermal* consequences of the excessive temperature which our hypothesis assigns to the terrestrial mass at a former period. Assuming this former temperature to have existed, the earth must have gradually cooled down and solidified, passing through continuous changes of temperature till it arrived at its actual state. We thus easily account for the amount of igneous rock which, now solid, must have been injected in a fluid state into the sedimentary portion of the earth's crust, as already explained, and also for the similar character of the rocks on which the sedimentary beds generally repose. A somewhat generally higher

and more equable climate over the earth's surface, at remote geological periods, is likewise thus accounted for.*

This cause was formerly thought sufficient to account entirely for the change of climate recognised by geologists, so long as that change was supposed to have been a gradual one from a higher to a lower temperature; but it could manifestly not account for a temperature in the glacial period so much *colder* than at present. This fact has led to a more careful investigation of other causes which may locally exercise a great influence on climate. These are found in the particular disposition of land and sea, and, more especially, in the ocean currents of warmer or colder water. The Gulf Stream exerts at present an enormous influence on the climate of North-western Europe, by the quantity of warm water which it pours into the Northern Atlantic. The current derives its water from the tropical sea in its original north-westerly course, and is reflected back from the American coasts about the Gulf of Mexico, in a north-easterly direction to the coasts of Europe. The consequence is, that we enjoy in these regions an abnormal climate, much higher in temperature than our latitude entitles us to. The mean annual temperature of the south-west of Ireland is probably higher than that of any other country in the same latitude. The following quotation does not contain mere vague assertion, but is founded on careful investigation :—

> If a change were to take place in the configuration of the surface of the globe, so as to admit the passage of this current directly into the Pacific, across the existing Isthmus of Panama, or along the base of the Rocky Mountains of North America, into the North Sea—a change indefinitely small in comparison with those which have heretofore taken place—our mountains, which now present to us the ever-varying beauties of successive seasons, would become the unvarying abodes of the glacier, and regions of the snow-storm; the beautiful cultivation of our soil would be no longer maintained, and civilization itself must retreat before the invasion of such physical barbarism. It is the genial influence of the Gulf Stream which preserves us from these evils.†

With such a powerful cause for change of climate in actual operation before us, we must be cautious how we appeal to any other cause as *necessary* to account for the higher tempe-

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* This latter statement, for reasons which we cannot stay to discuss, must be received with more reservation than that with which it has usually been received by many geologists.

† Presidential Address to the British Association. 1853.

rature in the climate of former periods. We may remark, however, that a general and simultaneous elevation of temperature, in all the different regions of the earth's surface, could not be accounted for by the cause just mentioned.

34. It is the result of mathematical investigation, that if a globe uniformly constituted throughout, and of very large dimensions, like the earth, were heated in any manner and in any degree, it would, after some enormous period of time, arrive at such a state by the continual radiation of heat into surrounding space, that the increase of temperature in descending below the surface would be almost exactly proportional to the increase of depth. This is in general accordance with the observed internal temperature of the globe (27), and has led to the belief, on the part of many geologists (as already intimated), not only in what is termed the *primitive* heat of the globe, but also in an existing *central* heat, to which its present internal heat near to its surface is attributable. Moreover, if this be true, the temperature, it has been contended, at the depth of forty or fifty miles, must be such as to reduce all the matter there to a state of fusion, assuming the increase of temperature observed within the depth of two thousand feet to be continued to the depth above mentioned; so that the globe must consist of an enormous mass of incandescent fluid matter, enveloped in a shell, the thickness of which may not exceed a two-hundredth part of its diameter. This may appear a somewhat startling conclusion to a reader uninitiated in geological mysteries, but we may in some measure reassure him. The above estimate is made on the supposition, first, that heat passes with the same facility through the sedimentary strata as through the more compact primitive rocks beneath; secondly, that matter will fuse at the same temperature under the enormous pressures to which it must be subject at great depths, as under the simple atmospheric pressure on the earth's surface; and, thirdly, that the observed temperature beneath the earth's surface, and below the reach of solar heat, is derived entirely from the central heat. Now the first and second of these suppositions have been recently proved, by numerous experiments, to be far from the truth; and it has also been shown (and, as we believe, satisfactorily) that the third is likewise erroneous. The result of these researches is, that the earth's crust must be of much greater thickness than that above stated.

This question of the thickness of the earth's crust may appear at first sight to be one in which the sun and moon have little concern. Such, however, is not really the case, and we appeal with great confidence to their impartial and trustworthy

evidence. In fact, their action in producing the precession of the equinoxes (30) is not the same when the earth is internally fluid as when perfectly solid; and the result of the mathematical investigation of the problem is, that if the earth's crust were as thin as above stated, the amount of the precession would be unmistakeably different from its actual amount. If, however, the thickness approximate to about one-fifth of the radius, or to about eight hundred miles, the difference would be scarcely perceptible. This is the result when the internal mass is supposed to be perfectly fluid; if it have some degree of viscidity, the resulting thickness of the crust would probably be something less, but it would still be in accordance with the totally independent investigation above mentioned, as giving a thickness much greater than the forty or fifty miles which has been assumed by some geologists as a basis of theories by which they would account for the present existence of volcanos and the former elevation of mountain chains.

35. The rival theory to this theory of primitive and central heat, is that which attributes not only the observed terrestrial temperature at moderate depths, but also the heat of volcanos to *chemical action*. It is assumed that the interior of the earth consists of an unoxidized mass, portions of which become oxidized by the air and water which descend and come in contact with them, and that heat is thus constantly generated. It is extremely difficult, however, to conceive how the enormous mass of igneous rock injected into and underlying the sedimentary rocks could ever have been fused by this agency; for it has never been explained how water, which vaporizes at a temperature comparatively so low, could penetrate in the quantity supposed to rocks at the enormous temperature required for their fusion. Still we admit the possibility of a certain quantity of heat being produced by chemical action, and that a part of the general temperature above described as existing at moderate depths within the earth may be due to it; but this by no means meets the requirement for the intense internal heat by which alone we can possibly render any account of the elevation of continents and mountain chains, and the accompanying phenomena. The balance of probabilities is, in our opinion, infinitely in favour of the theory of a former incandescent state of our planet, whatever may be the causes of the superficial temperature which has so frequently been considered as indicative of an existing central heat.

But whichever of the above theories be the true one, we would here especially remark, with reference to the great specu-

lative question of *progression* or *non-progression*, that the chemical theory is just as inconsistent with the doctrine of *non-progression* in the physical condition of the earth, as that of a primitive heat; because it is impossible to conceive the continued production of heat by any chemical action like that above mentioned, *for an indefinite period of time.* Any finite unoxidized mass exposed to this action must become oxidized in a finite time. The process must cease, and leave the mass at a different temperature from that at which it must, according to this theory, have maintained it at the period of the first origin of our planet. This constitutes *progression* from a primitive towards a final physical state.

36. According to the theory of *non-progression*, geology ought not to present us with any indications of a *beginning* of the present order of things within any *finite* period of time; for if it be allowed that the earth was created as it now exists within such period, the advocates of the theory can be in no better position than Chateaubriand with his crows' nests. They can only escape this position by thrusting back the origin of things into the obscurity of a past eternity. But let us assume, for the moment, that the causes which have been constantly modifying the face of the globe by denudation on the one hand, and elevation of continents and mountains on the other, to have been in active operation for an indefinite period of time. Any part of the external portion of the original mass of the earth would be liable to be elevated to a certain height, and thus to become exposed to the action of denuding causes; and *in an infinite time* we must suppose that *all* that portion of the superficial crust liable to be thus elevated above the surface of the ocean would be actually at one time or other denuded, and the matter transported and deposited in other localities as *sedimentary* and, generally, fossiliferous beds. Hence the question arises, whether the actual quantity of such beds is at all equal to this limiting quantity to which they must amount in an infinite time. Data are not altogether wanting for the calculation. We pretend not, however, to enter upon it; but there are probably few geologists who would see in the beds which can now be indisputably considered as sedimentary, the work of past time of infinite duration. An answer has been given to this argument by supposing the process of *metamorphism** to have been always contempo-

* By this is meant the obliteration of organic remains, and, in a great measure, of all indications of stratification in a sedimentary mass, by exposure to such a degree of heat as may be required to produce the effect.

raneous and co-extensive with that of deposition. But, for the moment, allowing this to be true, it could not take place without a heat of great intensity within the depth of not many thousand feet below the earth's solid surface at the time. But such heat would necessarily be constantly escaping at the surface into the colder surrounding space, and how could this waste be as constantly supplied? We assert that hitherto no process of generation of heat has ever been suggested by which such uniform supply for an *indefinite period of time* could by possibility be furnished. In this consists the great stumbling-block of the advocates of non-progression with respect to the physical state of the earth. All geological theories without exception which treat of the elevation, depression, and dislocation of the earth's superficial crust, and the phenomena connected therewith, assume the existence of an internal terrestrial heat much greater than the external temperature of surrounding space, and in such case nothing is more certain than the incessant escape of heat by radiation from the earth's surface; and so long as no possible means can be indicated by which this constant loss can be as constantly supplied, there is an unanswerable argument against the theory which maintains the physical state of the earth to have been essentially the same for an indefinite period of time as at the present moment.

37. Let us now consider this question—but briefly—with reference to the evidence supplied by organic remains. And here we may remark, that the question of *progression* or *non-progression* has, perhaps, generally been more or less associated in the minds of speculative geologists with that of the *transmutation* or *permanence of species*. It should be understood that the proper definition of the term 'species' is not, abstractedly, dependent on anatomical or zoological characters, but is independent and absolute. If a single animal, or a single pair (male and female), were originally created distinct from all other animals, all the descendants, proceeding from this primitive source, would constitute a species, to which no other animals could belong. Practically, separate species must be determined by their anatomical and zoological characters, and the lines of demarcation thus established may frequently, in the lower orders of animals, be inaccurate or ill-defined; but this defect arises from our ignorance, and not from the want of absolute determinateness in our definition. The idea of the *permanence* of species is, in fact, involved in the definition itself; for if there be no such permanence, there cannot be different and independent species. In like manner we may remark, that the term *transmutation* of species involves

really a negation of our definition; for if one species may pass into another, there can no longer be those determinate lines of separation which the existence of different species necessarily implies. The expression 'transmutation of species,' is intended to imply that a race of animals, which for a length of time have preserved their distinctive zoological and anatomical characters, may have lineal descendants with entirely different characters. According to this view, permanence of specific characters is only temporary, whereas according to the opposite theory it is absolute as long as the species exists. The question really involved in that of transmutation or permanence of species, is whether species—using the term in its wider and more unrestricted sense—have any existence in nature or not.

We have seen that different races of animals have been introduced on the face of the globe at successive epochs, as testified by their fossil remains. Hence the question of the transmutation or permanence of species becomes one of the highest interest as a geological question. Some geologists have contended, that these successive races consisted of different species in the widest sense of the term, while others have maintained that they consisted only of animals lineally descended from those which had existed antecedently, having acquired new forms by *transmutation*, due to the action of ordinary causes for long periods of time. The former class of geologists consider these new forms to have been not derivative forms, but something absolutely new in the kingdom of nature, and therefore requiring for their introduction an effort of Creative power, or, if we please so to express it, the agency of some cause which we cannot recognise in that ordinary continuous sequence of causes which we do recognise in the continued propagation of organic life. The opponents of this view maintain, on the contrary, that no such supernatural agency is required.

The advocates of the theory of transmutation, or the *development theory*, as it has been termed, have generally, perhaps without exception, supported the theory of the progression of organic life by the successive developments of lower into higher forms of existence, and a similar advance in the physical state of the earth; whilst those who have advocated the permanence of species and their successive creations, have been divided on the question of progression or non-progression. In *The Vestiges of Creation*, the development theory assumed the unequivocal form of materialism; while in an essay on the *Philosophy of Creation*, by a distinguished member of the sister University, the first introduction of animal life, and all the modifications of organic forms and modes of existence,

including man—regarded merely with reference to his physical organization and animal instincts—come under his theory of development, which is thus far in accordance with that of the *Vestiges*, from which, however, if we understand these theories correctly, it then differs in the important point of reserving for the intellectual, the moral, the spiritual man a distinct creation, as a direct emanation from the Divine Creator.

We have no intention of entering into the details which have been brought to bear on these questions. It would be inconsistent with our purpose to do so. Those who wish to examine them with reference to the question of progression or non-progression, may refer to the presidential address delivered by Sir C. Lyell to the Geological Society in 1851, and to the review of it which appeared soon after in the *Quarterly Review*, and has been attributed to one of our most distinguished naturalists. Besides, we believe that the subject may be much better presented to the minds of most of our readers through the medium of general facts than by means of minuter details.

38. It appears from the brief tabular view above given (12) of organic remains, that the earliest fauna—that of the Cambrian division of Sedgwick, or Lower Silurian of Murchison—contained none of the higher forms of animal life, nor was it restricted to the lowest. Cephalopoda of magnificent dimensions, and Crustacea in the peculiar and characteristic forms of trilobites, abounded in the most ancient seas of which the remains of animal life afford us any record. And these were animals of comparatively high organization. The former have been in recent times but feebly represented, and the latter have entirely passed away. Brachiopoda were also very numerous, together with various zoophytes. No fishes or reptiles are found there. In the Silurian (Sedgwick) or Upper Silurian (Murchison) the organic remains become more numerous, and the Vertebrata are represented by a few fishes, but no reptiles. In the Devonian age, fishes appear to have sprung at once into luxuriant life in the forms of one of the most perfect types of ichthyic organization, and to have flourished in all the freshness and vigour of a new existence, no traces of gradual development through more imperfect forms being discoverable in their remains. A skeleton of a Batrachian reptile in the old red sandstone of Scotland has also given us intimation of the introduction of reptiles at this period. From that time fishes have abounded, and the remains of the lower orders of animals increase generally in number and variety in succeeding strata; but reptiles did not arrive at their full development till the period of the Lias, a

formation which furnishes us with the remains of Saurian reptiles differing so enormously in number, magnitude, and zoological characters from the few which, according to existing evidence, appear to have preceded them. But whence came all these enormous Saurians, and whence came the numerous and highly organized fishes of the old red sandstone? To what ancestries can we possibly trace them? The same questions may be asked with reference to numerous other tribes of animals. We only select these because they afford more striking examples, on account of their higher organization and better known forms. Not only particular species but whole tribes have passed away, and been succeeded by others bearing no assignable affinity to those which preceded them.

We find exactly similar facts in later formations. In the Stonesfield Slates, near Oxford, a bed of the Lower Oolites, we find the earliest mammalian remains yet discovered—those of the Amphitherium and Phascolotherium. Very recently, also, some of the upper beds of the Oolites, the Purbeck beds, have afforded several species of small mammals. In the lower tertiaries (Eocene formation), a considerable number of mammalia make their appearance, belonging to the order of the Pachydermata. They have entirely disappeared. In the later tertiaries numerous remains are found of nearly all the orders of mammalia. Finally, the series is crowned by the introduction of man, whose remains, however, have never been found in a fossilized state.

Hence it appears, according to existing evidence, that invertebrate animals alone existed in the earlier paleozoic period. Fishes were then introduced, and existed in great numbers in the Devonian period; and, shortly aftewards, reptiles appeared. Small mammals existed in the middle or Mesozoic period, the whole class becoming completely developed only in the latest geological era. The remains of birds, as might be expected, are comparatively very rare. The introduction of man is the great and final step in this progressive series.

39. These facts, and numerous others of the same nature, are manifestly calculated to refute both the extreme theories above mentioned—that of the complete development of organic life by successive steps, from the lowest and simplest forms to the highest and most complicated, and terminating in man; and that which maintains that there has been no progression at all. We shall first offer a few remarks on the bearing of geological evidence on the latter theory.

When two animals are not far removed from each other in the general scale of organization, it may be difficult to decide

which exhibits the higher organization of the two. Some organs may be more perfect in the one, and others more perfect in the other; and thus it must be extremely difficult or impossible to define precisely the successive steps which would constitute a continuous progression from lower to higher organic forms. There can, however, be no similar doubt with reference to two animals sufficiently removed from each other in the general scale of animal life. We need not appeal, in asserting this difference, to the extreme case of a man and a sponge; the difference is equally manifest, if not equally great, between any of the mammalia, or highest class, and a molluscous animal, like a cephalopod, or a crustacean, like a trilobite. If, therefore, the evidence comprised in known geological facts were the complete evidence on the subject, the notion of an actual progression in animal life would doubtless be at once allowed, from such leading facts as those just enumerated, without requiring any other than the broad and general definition of the term, which must be easily admitted by any rational mind. No geologist would contradict this statement. But the arguments against the theory of progression are based on the incompleteness of the evidence hitherto furnished by observation. Much, it is contended, may yet remain to be discovered, and the evidence of geological phenomena may, hereafter, be entirely changed. The doctrine of progression is thus made, it is said, to rest on the assumption that no future discoveries will alter the conclusions which we might be justified in drawing from the facts at present known to us, or, in other words, that the theory is made to rest on *negative evidence.*

Now, we would especially direct attention to the way in which this notion of negative evidence is here introduced. If we would simply judge how far the proof of a theory is complete or incomplete, we must manifestly allow that it is complete only so far as it rests on *positive*, and incomplete so far as it rests on *negative* evidence. If we would judge, in like manner, of the value of the proof in favour of a rival theory, we must regard it in the same manner; and if, finally, we would compare the claims of the two theories on our belief, we must compare the values of the proofs respectively in favour of the one and the other. Because the proof of one theory is imperfect, we are not, therefore, to adopt the opposing theory; but, if we act without bias or prejudice, we shall adopt that theory the proof of which is the *least imperfect*, our belief in it being always accompanied with a degree of reserve proportioned to the incompleteness of the proof. Let us apply this

principle to the theories of progression and non-progression. We must not merely take the former, and criticize the incompleteness of the demonstration which it admits of; we must also subject the opposing theory to the same scrutiny. We should otherwise throw the onus of proof on one side alone, the philosophical equity of which, in the case before us, we utterly deny. Now, we have in favour of progression a large amount of positive evidence, while it is admitted that the proof of it rests partly on negative evidence. On the other hand, we are not aware of any positive evidence whatever in favour of non-progression; the proof rests exclusively on negative evidence. We are called upon to believe it, not because past discoveries afford any positive evidence in its favour, but because future discoveries *may* supply such evidence. As regards these discoveries, we are far from thinking that they have arrived at the ultimate limit to which they must constantly tend, in reference to the testimony they may hereafter supply on such questions as the one before us. We have little doubt, on the contrary, that the higher orders of vertebrate animals will be found to have extended farther back into past time and in greater numbers than present discoveries may indicate; but we should be exceedingly astonished to hear of men, and elephants, and rhinoceroses, being found in the Cambrian or Silurian beds of Snowdonia. There are, perhaps, scarcely any formations which have been subjected to a more critical research for fossil remains than those of the older paleozoic period. The keen eyes of the Geological Survey have been upon them in Wales for several years; M. Barrande has examined them in minute detail in Hungary; and the American geologists have examined them with great care in their own country; and yet little or nothing has been done to prove the former existence of the higher forms of animal organization during those early geological periods.

It has often been contended that, since land must have existed in the early paleozoic times, there must have been animals to inhabit it, though their remains have not yet been discovered. Good, or at least plausible reasons may, however, be assigned why the paleozoic land may have been far less in extent, less elevated, and less varied in its surface, and subject to more frequent submergence than in later geological periods. Its character, therefore, as the abode of animal life, may have been very different from that of existing dry land. We are not founding any positive argument on this supposition; but it may be fairly urged against any *à priori* argument in favour of the former existence of land animals of the same

order of organization as those of the present day, founded on the probable existence of dry land in those early periods. We must ultimately be driven to the positive evidence of facts. It may be said that this evidence must be imperfect in a degree proportionate to the ratio which the portion of a formation actually examined bears to the whole formation. This is unquestionably erroneous. If it were not, the whole mass of geological evidence of every description would be almost worthless. If we would form some idea of the probability of finding the higher organisms in the oldest formations, we must compare the results of the research which has there been made for them, with the results of equal research in other formations in which these organisms have been discovered. If mammalia did exist in paleozoic times, we conceive it to be most difficult to explain why the early tertiaries should present so many species of them, while the old paleozoic rocks present not a trace of them. And more difficult still, perhaps, would it be to explain why no remains of fishes are found in the paleozoic rocks anterior to the Upper Silurians. It is more rare, perhaps, for a fish to die on land than for a land animal to die in water. The same reason cannot be assigned, therefore, for the non-preservation of remains of the former as for that of the remains of the latter. And yet there are no more indications of fishes during the period just mentioned—and that period must have been of enormous duration—than there are of animals which inhabited the dry land.

We would ask our readers, then, to place these two theories of progression and non-progression side by side, to examine the evidence for each, and give the question a fair trial in the open court of Inductive Philosophy; and we believe that they will decide, as we cannot hesitate to decide ourselves, that the law of progression—however slow the progression may be—is the law of nature, evidenced as well by the phenomena of organic as by those of inorganic matter.

40. But let us now turn to the question—How were new species of animals originally introduced on the face of our globe?

When we consider attentively the various operations and phenomena with which we are acquainted in the natural world, we cannot but remark a certain character of *continuity* which pervades them, and which superinduces the conviction that the same character must pervade all physical causes, and the laws according to which they act. The discontinuous action of a physical cause, while the conditions under which it acts remain invariable, may not, as an abstract conception, present to our minds an impossibility; but we should no more believe

such a cause to exist in the ordinary operations of nature, than we should think of gravity ceasing to act, fire to burn, or light to illumine, at stated periodical intervals. If, therefore, we should recognise among geological phenomena any which clearly and distinctly possess a character of discontinuity indicating a corresponding discontinuity in the action of the causes producing them, we cannot regard such causes and effects as included in those which constitute *nature*, in the proper and accepted meaning of the term. Such would be the production of species entirely different from those which had preceded them, supposing the absence of all continuous change from the old to the new species to be unequivocally established. In that case, we should necessarily refer the introduction of these new species to causes which, on the principle here stated, must be regarded as strictly *supernatural*—causes essentially extraneous to, and above the common course of nature. Such appears to us to be the only form in which the question before us can be discussed on the evidence of geological phenomena.

Under this view of the subject we have only to examine the nature of the testimony which geology affords respecting the manner in which entirely new forms of organic life have been introduced. Now, it must be understood that here, as well as in the question which has been previously discussed, we pretend not (and for the same reasons as there stated) to enter into any of the minute details which might be brought to bear upon the subject, but to content ourselves with a reference to the broader facts established by indisputable evidence. Among the lower orders of animals, we have innumerable instances of the introduction of species which are considered by the ablest naturalists to be entirely distinct from any which preceded them. Still, the lines of separation between different and independent species among these lower orders is far more uncertain than among the higher ones, where, in numerous cases, no such ambiguity can exist sufficient to affect the question before us. We allude more especially to the different orders of mammalia, such as the great pachyderms, the elephant, rhinoceros, &c., or the carnivorous animals, the ruminants, and the numerous insectivora. Geological evidence clearly proves the comparatively late introduction of such animals on the face of the earth; and, so far as it goes, it as clearly indicates the absence of any gradual and continuous passage from one species to another. In existing nature we know of no distinct species proceeding from the hybrid productions of individuals of nearly allied species; nor have we in geological phenomena any evidence of a like amalgamation of

species. Our readers may accept this as the opinion of all the best naturalists and paleontologists of the day. In fact, even those who may be most disposed to uphold the doctrine of the transmutation of species, would scarcely think of establishing it on the testimony of geological facts. But this theory, indeed, can scarcely be said to rest directly upon facts at all. It is founded, we conceive, on *à priori* considerations, and on a kind of induction from the ordinary course of nature. It is assumed that the continuity observable in *ordinary* natural phenomena, must necessarily exist in the *extraordinary* phenomena of the introduction of new species. But here it is forgotten or ignored how these extraordinary phenomena apparently *do* differ, and undoubtedly *may* differ, from ordinary phenomena, in having no antecedents in nature—nothing anterior with which they can be connected by any law of continuity. The theory may be admitted hypothetically, but, like every other theory, it must be tried by an ultimate appeal to facts, and is not to be received as true from any self-evidence which belongs to it.

41. Another notion appears to be, that it is not consistent with our highest conception of the Supreme Intelligence to suppose that the material universe, when once created, would require for its future conduct and maintenance any further intervention of Creative power, or the operation of any causes whatever to which matter was not originally subjected, or the influence of any properties with which it was not primitively endowed. But here there is an obvious fallacy in the supposition that the laws self-imposed and established, if we may so speak, in the Divine mind, for the government of the material world, were only such as are identical with or resemble those which we, in our weakness and blindness, are able to recognise in the common course of nature within the limited sphere around us. For ourselves, we admit no such supposition, and have little respect for the claim which would seem to be made in the profession of such views to a more intimate and intuitive knowledge of the Divine Councils than ordinary philosophers possess. We greatly prefer the claims of those who, in a more humble and patient spirit, seek to gain their glimpses of truth in such high matters by the diligent study of the Creator's works, and not by these *à priori* presumptions.

42. This theory, when taken in its full extent, is manifest materialism. The animals of lowest organization have been derived, it asserts, from inanimate matter by some ordinary and general process of nature, and those of higher forms have been derived from the lower, till man was finally arrived at as

the crowning point. Thus not only are all the ordinary phenomena of organic life, but likewise all our intellectual and moral attributes, derived primarily from inert matter by the operation of natural causes, without any separate creation either of animal life, or of the spiritual life of man. When we once allow ourselves to theorize on assumed hypotheses, without submitting our conclusions to the healthy touchstone of facts which inductive philosophy prescribes to us, it would appear difficult to startle ourselves into sober judgment by any conclusion, however preposterous, at which we may arrive. The advocates of the theory we are speaking of will, we doubt not, be ready to admit the former fluid and incandescent state of our globe; and it then follows necessarily from their theory that the noblest qualities of man's intellect, the tenderest feelings of his heart, the deepest consciousness of his moral responsibilities, and his highest aspirations for the future, must all have been once contained in a molten mass of matter, to be finally evolved from it by natural causes a few thousand years ago. And yet there are men who, in the confidence of their own intuitive insight into the Creator's ways, shrink not from conclusions which, we doubt not, will appear so preposterous to most of our readers.

43. It is not without a feeling of impatience that we have dwelt even thus briefly on these views; but they are important at least as presenting to us one of the alternatives if we reject the theory of successive creations, and the permanence of species in the animal and vegetable kingdoms. We must not, however, confound these views altogether with those entertained by the author of the *Philosophy of Creation*, to which we have before alluded. According to this latter theory, the offensive part of the materialism of the other is avoided, as already intimated, by regarding the spiritual part of man's nature as the special object of a separate and independent creation; while for the merely animal part he is indebted to the same material elements and natural causes as those from which the brute creation is supposed to derive its origin. Possibly our readers may be curious to know to what species of Quadrumana the happy pair belonged who first inhaled the breath of spiritual life, and became the honoured progenitors of the human race. We cannot satisfy their curiosity; for this is a point at which the most daring speculative philosophers seem to arrest the flight of their fancy, and disappoint their inquisitive followers.

But no intermediate theory of this kind is ever likely, we conceive, to be otherwise than very partially accepted. Though the one before us avoids the more monstrous extravagance, it

loses the greater simplicity of the more unrestricted theory; and still involves what appears to us the enormous difficulty of conceiving how the sensation, volition, memory, foresight, and all the instincts of animals, can be derivable from inanimate matter. We believe that a careful consideration of such theories must generally lead to increased confidence in that which maintains that the Creator, for the introduction of new classes of animate beings from time to time, has called into action powers altogether different from those which we recognise in the ordinary course of nature.

44. Views like those we have just been discussing, even under their more restricted forms, will always be open to the suspicion of pantheistic tendencies, though in many instances (as in that of the author of the essay just mentioned) their advocates may individually be far above such suspicions. Unfortunately, such tendencies were very strong among distinguished naturalists at the close of the last century. So far from admitting the idea of intervention with the common order of nature, the very notion of the existence of a Supreme and Personal Governor of the Universe was utterly rejected by them. Geoffroy St. Hilaire, a man of enthusiastic genius, with great anatomical and zoological knowledge, but deficient in calm and philosophic judgment, was one of the earliest leaders of this school of naturalists. The genius of his contemporary, Cuvier, who was directly opposed to this new school of Transcendental anatomy, as it has been termed, was of a directly opposite character. With the utmost refinement of observation in minute details, and analytical acuteness of the highest order, he united the power of large generalization, ever under the guidance of a calm and comprehensive judgment. He was a fine embodiment of inductive philosophy. Natural History called for such a man. Cuvier answered the call, and performed his mission nobly. He gave to the multifarious details of the science a classification the characteristic features of which will probably ever remain, under any modifications which its details may undergo. He established the great principle of the mutual relations of the different organs, in subservience to the accomplishment of determinate purposes in the economy of each individual animal,—its habits, the obtaining of its food, its nourishment, and the continuance of its species. Hence he was enabled to reconstruct so beautifully the skeletons of different vertebrate animals from the fossil fragments of their bones and teeth, with which the quarries of Montmartre, more especially, so happily supplied him. He thus laid the foundation of that great branch of paleontology which relates to the Vertebrata, and which has

been since so successfully prosecuted by his successors, and by none more so than our distinguished countryman, Mr. Owen.

But with the advanced knowledge of animal organization, speculative naturalists soon began to search for generalizations of a higher order than those of Cuvier, which, though based on anatomical characters, had more especial reference to mere zoological classification. Many of them adopted the principle of a *unity of plan* pervading the entire range of animal organization. The poet Goethe was one of the earliest of those who entered into these speculative views, in which, with more accurate knowledge of details, he might possibly have taken the lead which St. Hilaire obtained by his enthusiasm and continued devotion to the subject. The leaders of this school rejected altogether the great principle above mentioned, which Cuvier considered himself to have established—the adaptation of organs to the fulfilment of pre-ordained and special purposes, in which consists what is usually enunciated as the *Doctrine of Final Causes*. It was, however, much easier to object to Cuvier's doctrine than to assign any definite meaning to their own; and in the accounts which have been handed down to us by St. Hilaire himself, of the frequent and earnest discussions which took place at the meetings of the French Institute between himself and his distinguished opponent, it is sometimes amusing to observe the frequent embarrassment of St. Hilaire in replying to the constant demands suggested by the acute and philosophic mind of Cuvier for exact definitions of the terms employed; and to remark also the delicate sarcasm with which Cuvier's mastery of language enabled him to touch upon the shortcomings of his opponents in this respect. But still, amidst all this indistinctness of conception and indefiniteness of language, there was lurking an important idea which Cuvier never recognised, or to which, at least, he never did justice—the idea of a generalization of a higher order than that which he had himself so admirably worked out. This extended generalization was associated, in the minds of those who first made it an object of research, with notions of causation entirely at variance with the belief in a Presiding Intelligence and Personal Governor of the physical and moral world. Their views, however, resolved themselves practically into endeavours to discover a form which should serve as a *type* of all organic forms in the animal kingdom, according to their fundamental notion of a *unity of plan;* and this object was again restricted, after a time, more especially to the vertebrate skeleton. In the Vertebrata, the persevering researches of the most distinguished naturalists have been crowned, it is considered, with success, though they are still

far from being exactly agreed as to the precise typical form. That proposed by Mr. Owen is regarded, we believe, especially by the naturalists of our own country, as having much the strongest claims to our confidence. We may congratulate ourselves in having amongst us a naturalist possessing much of the boldness of this school of transcendentalists, tempered by the true spirit of inductive philosophy.

According to these views, every vertebrate skeleton is divisible into a number of transverse segments perpendicular to the general direction of the vertebral column, or back bone, each segment of the neck, the back, and the tail, comprising a single vertebra,* and each segment of the head comprising a bone analogous to a vertebra. Immediately above the central bone of each vertebra (the spinal column being supposed horizontal) is the *spinal canal,* extending from the head to the tail, and containing the spinal chord as a continuation of the mass which constitutes the brain. This canal is strongly fortified on every side by characteristic bones of the vertebra. The cavity in the head which forms the receptacle of the brain, is regarded as an expanded continuation of it. Again, if we take a thoracic segment, we have another space below the spine, enclosed by the ribs and breast bone, and containing the viscera. It is called the *hæmal canal,* the thoracic portion of it being the most expanded part, as the receptacle of the brain forms the most expanded part of the spinal canal. The hœmal canal is less complete than the spinal one in the neck, the tail, and the portion of the back posterior to the ribs, where bones corresponding to those which enclose the lower side of the canal in the thoracic segments are wanting. The division of the head into segments, each of which shall consist of bones analogous to those recognised as essential parts of the segments of the body of the animal, has been a source of immense difficulty and difference of opinion among anatomists. This division has been effected most ingeniously by Mr. Owen, who divides the head into four segments and has established their analogies, or what are termed their *homologies,* with reference to the segments of the trunk, in a manner which certainly appears to us to be very remarkable. The anterior and posterior limbs have also been a source of almost equal difficulty. Mr. Owen's view respecting them forms one of the boldest and most ingenious parts of his generalization. The fore-limbs of quadrupeds bear an obvious

* The term 'vertebra' is here used in the common sense; Mr. Owen has used it in a more comprehensive sense, to signify a whole transverse segment.

analogy, as organs of locomotion, to the fore-fins of fish. Now, these fins are attached to the last segment of the head (reckoned from the anterior part of the animal), whereas, in other classes of the Vertebrata, the fore-limbs are removed from a corresponding position over a space containing all the vertebræ of the neck. At the same time, it is remarked in such cases, that the last or occipital segment of the head is imperfect in those particular parts and appendages which would be exactly supplied by the fore-limbs were they actually attached to the segment in question. According to this view, therefore, our arms are not to be regarded as belonging, by any particular right, to our bodies, but as appendages to our heads, having been removed from their proper typical position for the more complete performance of the functions for which they have been given to us. We do not mention this circumstance to lessen the faith of our readers in a generalization of the truth of which we entertain a strong belief, but for the purpose of indicating what large modifications must be admitted in bringing any specific form of the vertebrate skeleton into accordance with a single typical form. This must be felt in every part of the subject, and may, in fact, be at once understood when it is stated that the typical form, according to these views, approximates nearly to that of a fish. This may not be deemed very complimentary to *man* in his erect and noble bearing, but that must not interfere with our acceptance of a well-established generalization; still, while we accept it, we are bound also to recollect that it is not the expression of a definite and inexorable law, but of one which accommodates itself to all the wants of the various animal races over which it claims dominion.*

45. We shall best explain our own views, perhaps, of the nature of this generalization, by a reference to those effected in other branches of science. The regular forms of crystals, as is well known, are very various and numerous; but there is a small number of forms, which have been termed *primary*, to which all other, or *secondary* forms, bear some simple relation, or from which they may be derived by some comparatively simple modification. These forms are in some measure arbitrary; whether the typical skeleton may be so, or something more absolute in nature, is immaterial so far as our comparison is concerned. Now, if typical forms had been clearly made out for the other three divisions of the animal kingdom—the

* For the details of this curious and interesting subject, see Mr. Owen's *Homologies of the Vertebrate Skeleton*, and his *Essay on Limbs*.

Articulata, the Mollusca, and the Radiata—as well as for that of the Vertebrata, the science of Comparative Anatomy would have been, in this respect, in a position analagous to that of crystallography. Such typical forms may be described as *geometrical generalizations*. Again, Kepler's discovery of the laws of the planetary motions—that they move in elliptical orbits, and describe each successive revolution round the sun in periods bearing definite relations to the larger axes of their orbits—was a geometrical generalization. But Kepler did not discover *why* the planets move according to these laws. That was left for the genius of Newton, who, in the discovery of gravitation, discovered the physical cause of these phenomena, or (if the mode of expression be preferred) rose to a far higher order of generalization. The corresponding step in crystallography would be the discovery of the laws of those molecular actions by which the elementary particles of crystals become aggregated into the various crystalline forms. Considerable attention has been given by the most distinguished mathematicians to researches connected with molecular attractions, but hitherto little positive progress has been made in this important branch of physical science. A more perfect knowledge of these attractions would give to crystallography its *physical* branch in addition to its present *geometrical* branch of the science, as the discovery of gravitation gave rise to *physical* astronomy, in addition to *plane* astronomy, which is concerned with little more than the geometry of the subject.

Continuing our comparison, we see, then, that before comparative anatomy has completely attained the stage analogous to the present state of crystallography, or that of astronomy before the time of Newton, typical forms must be determined for the three lower great divisions of the animal kingdom, as well as for the Vertebrata; and then, in order to bring the subject to a position analogous to that of physical astronomy, or that in which crystallography would be brought by a perfect knowledge of molecular attractions, there would still remain that higher order of generalization which would reveal to us the nature of those mutual actions of particles of animate matter on which the formation and growth of animal organs and all the phenomena of animal life may be conceived to depend—if, indeed, they depend not also on other causes which it has never entered into our philosophy to contemplate. The problems which molecular actions present to the mathematician, involve difficulties of a far higher order than any which have yet been overcome in the problems of gravitation; and again, problems involving vital actions must involve infinitely greater difficulties still. It may be rash to prescribe any

precise limits beyond which the human mind can never go in such researches, but its powers must be finite; and it may well be doubted whether their limits can ever compass the solution of the problems of which we are speaking. How shall man attain to this knowledge? It is too high for him. Is it possible that the early cultivators of Transcendental anatomy had in any degree realized in their own minds these enormous difficulties, when they dreamed of making out the causes to which the formation of vital organs is due? We think not. We suspect them of having confounded that lower order of generalization which consists in the recognition of geometrical laws, with those far higher generalizations which lead to the knowledge of physical causes and their modes of action. We are aware that it has often been asserted, that since we know nothing of physical causes but by the sequence of the events referred to them, we know, in fact, no more of gravitation by means of the motions resulting from it, than we know of vital forces from the successive stages of animal development. But we regard this as a misrepresentation of the question. It is true that we are entirely ignorant of the *origin* of gravitation; but we say that we know what gravity *is*, inasmuch as we know exactly what gravity will *do* under any assigned conditions,—or, if we do not, it is not owing to our ignorance of gravitation, but to our imperfect means of calculating its effects in complicated cases. Thus, in a planetary system far more complicated than our own—in which, for instance, there should be several suns instead of one—knowing the positions and motions of all the bodies of the system at any one time, we could determine them at any other, provided always our mathematics should be sufficient to overcome the difficulties of the problem. We should require to know nothing more of gravitation than is already known to us. With respect to vital forces, we have, on the contrary, no power whatever of determining the effects which would result from their action under any other conditions than those of the actual cases submitted to us, in which we know the results merely from observation. This is what is meant when we say that we are altogether unacquainted with these vital forces, while we are perfectly acquainted with gravitation. If we knew the conditions which may modify the action of these vital forces, or those under which they would produce specific organic forms different from the forms which are known to us, then we might assert our knowledge of those forces in the sense in which we assert our knowledge of gravitation.

We have already remarked on the opposition of these early transcendentalists to the doctrine of Final Causes. This cir-

cumstance has contributed to create a suspicion in the minds of many persons that all such generalizations of the phenomena of organic life as those above mentioned are inimical to that doctrine. This we regard as an entire mistake: the doctrine rests on that exquisite adaptation of means to the purposes accomplished by them which characterises every department of nature, and gives to it that pervading harmony which we delight to contemplate. We see and we feel in this harmony, in this appearance of design, the evidence of the existence of a Supreme Intelligence and Creator; but are our convictions liable to be weakened by the belief that the Creator has effected his benevolent purposes through the medium of general and not partial laws? The doctrine of Final Causes asserts merely that those purposes have been attained, but takes no cognizance whatever of the extent to which the means adopted for their attainment have been made in accordance with general laws. That it has been so only tends, in our estimation, to exalt our conception of the beauty of creation, and the wisdom and power of the Creator. It is not that we admit the idea which would appear to have been entertained by some transcendentalists, that the adaptations and harmonies of which we have spoken are in *subservience* to those general laws, as if the potency of such laws were beyond the control of the Creator himself. We should rather, on the contrary, invert this mode of expression, and assert that these laws were impressed upon matter in subservience to the ends to be obtained. And this view we conceive to be sanctioned by the generalization above mentioned, of the characters of the vertebrate skeleton; for the deviations from the typical form presented in the peculiarities of particular species—the *adaptive modifications*, as they have been termed, of the typical form—to fit the organs for the performance of particular functions, are in many instances so great as almost to obliterate, at first sight, any determinate and obvious relation between the particular and typical forms. It would seem absurd to assert that the ends to be attained were in subservience to the typical form of the vertebrate skeleton, while the skeleton itself is subjected to these extensive modifications to adapt it to particular exigencies, and the external circumstances in which the animal exists.

46. We maintain, then, that even if our generalizations of organic forms were complete, and our knowledge of the physical causes to which the formation of living organisms is due, were *perfect*, so that we could calculate and predict their effects under every variety of the conditions under which they might act, as we can calculate and predict the motions of a

planet, a comet, or a falling stone—if, we say, we had this more perfect knowledge than man can hope for, we should not thereby supply the slightest argument in favour of pantheistic doctrines, or against that of Final Causes, simply because these doctrines do not depend on the means employed for the ends accomplished in organic life, but on the manner in which those means have been brought into operation—whether by a Presiding Intelligence, a Beneficent Deity, a Personal Ruler of the universe, or not. Again, the bearing of this supposed perfect knowledge of physical causes on the question of the permanence or transmutation of species, would only be to change the nature of the proof which the true view, whichever it may be, admits of. The decision of the question, instead of resting, as it does at present, on an *induction from known facts*, would be transferred to a *deduction from known causes*. The existence of general laws in the physical causes which act on organic matter, whether discovered or undiscovered, affords no argument whatever on the one side of the question or the other.

47. The character of a geologist is essentially that of a historian, but it is impossible for him, at times, not to assume something also of the prophetic character, and endeavour to stretch his mental gaze into the far future, as he habitually directs it to the remote periods of the past. Geological prophecies may fail, like all other prophecies; but, at all events, a degree of certainty attaches to them, as compared with those concerning human affairs, proportionate to the certainty belonging to the principles which guide the operations of nature, compared with the ever-changing impulses which direct the affairs of men. We shall, therefore, in concluding this essay, venture to offer a few speculations respecting the future of our globe; and in doing so, as many of our readers may have felt themselves called upon, in following our previous speculations, to enlarge their chronological conceptions of past times, so must we now request them to look forward to times indefinitely more distant than those to which they may have hitherto looked forward, perhaps, in their most remote anticipations of the future.

In the past history of the earth we have seen the important influence of heat; and in turning to the future of our planet we are naturally led, first, to inquire what effects may hereafter be expected to result from that universal agent in physical change. We have seen how marvellously the whole crust of the globe has been rent and torn, and to what enormous movements it has been subjected; and all geologists agree in re-

ferring these phenomena to the terrestrial heat, however they may differ as to the precise mode in which it may have operated. Is it probable that similar disturbances of equal magnitude will recur hereafter? Again, we have seen reason to believe that the climate in different parts of the earth's surface was formerly of higher and more equable temperature than at present. Has this temperature already approximated to its ultimate limit, or may it be expected to descend much nearer to the low temperature of the surrounding planetary space?

In answering these and all similar questions, we must, of course, adopt the fundamental principle enunciated in the early part of this essay (2), as applicable to the future, as well as to the past. Assuming this principle, and that the earth's internal heat is derived either from its primitive heat or from any known or conceivable physical cause which may evolve heat from the terrestrial mass—recollecting, moreover, that no such cause can be conceived to produce such evolution of heat *ad infinitum**—we cannot hesitate to express our belief that the terrestrial heat is probably at present, or must be hereafter, reduced so as no longer to be of sufficient intensity to produce a recurrence of those stupendous upheavals and dislocations which have taken place in past times. The principal argument we have seen against the notion of any diminution in past time of intensity in the causes to which such movements may be referred, and consequently against its probable diminution in future time, is based on the fact that some of the highest existing mountains—as the Alps, for example—do not date from an earlier period than the early Tertiaries. We cannot here enter into the discussion of the subject; but we may observe, that it would not be difficult to show that these uplifting agencies probably require long periods of time to gird themselves, as it were, with strength sufficient to raise and dislocate a mountain range; and that a diminution in their activity would probably be first indicated more by the less frequency of their action in reference to time, and its less generality in reference to space, than by their efforts in particular localities. A more decided indication of declining

* The distinguished French mathematician, Poisson, entertained the idea that the earth had long since lost all traces of its primitive heat, and that the existing terrestrial heat was derived from a portion of space, through which the whole solar system may be conceived to have passed at some former time, and which may have had a much higher temperature than the region now occupied by our system. This cause may not have been without its influence; but we regard the theory, in the extent advocated by its author, as altogether untenable. Our limits will not allow us to enter on the discussion of it.

energy must, of course, be looked for ultimately in the diminished magnitude as well as frequency of local efforts, and in their final cessation. We should not admit, therefore, that the elevation of the Alps, or that of the mountains of the like age, is sufficient to prove that there was no diminution of elevatory forces at the commencement of the tertiary period.

48. To the second question above stated, respecting future change of climate, we can, under certain conditions, offer a very distinct answer. The mean annual temperature of the earth immediately beneath the surface depends chiefly on external circumstances,—the quantity of heat received by radiation from the sun and stars, the temperature of the surrounding planetary space, and the constitution of the earth's atmosphere. It also must manifestly depend in part on the central heat, assuming such heat to exist. The mathematical solution of the problem tells us *how much* it depends on this latter cause; and our readers will perhaps be surprised to hear that though the central portion of the earth may consist of a mass of molten matter, the temperature of its surface is not thereby increased by more than the small fraction of a degree. Poisson has calculated that it would require *a thousand millions of centuries* to reduce this fraction of a degree by half its present amount, supposing always the above mentioned external conditions to remain unaltered. In such case the superficial temperature of the earth may, in fact, be considered to have approximated so near to its ultimate limit that it can be subject to no further sensible change. To recur to the illustration heretofore given (3), we may say that it is nearly arrived at that *asymptotic* state beyond which it can never pass.

We cannot assert, however, that the *internal* temperature is yet so far reduced as to be no longer capable of generating forces of expansion sufficient to elevate and dislocate more or less the earth's crust. We can only say that it *may* be so now, or, according to the principles on which we are discussing the question, *must* become so at some future period.

The continued reduction of the earth's internal temperature, and the consequent diminished intensity of all subterranean action, would necessarily, we conceive, in process of time, be followed by a somewhat startling result. Hitherto it would appear, as already intimated, that the processes of denudation and of elevation have been so far balanced as to preserve a pretty steady proportion of sea and dry land during geological ages; but if this elevatory action should cease, while the denuding forces should continue to act with unabated energy, the inevitable result would be, that every mountain-top would

in time be brought low. No earthly barrier could declare to the ocean that there its proud waves should be stayed. Nothing would stop its ravages till all dry land should be laid prostrate, to form the bed over which it would continue to roll an uninterrupted sea.

49. But when we speak of changes which, for their accomplishment, must require such immeasurable periods of time, we must consider how far we may reckon on the permanence of the external conditions under which the earth now exists. We are thus led to form some estimate of cosmical as well as of geological causes. Will the sun, it may be asked, continue to give the same light and heat with which he has hitherto blest our planet? Will the earth continue to move in the same orbit? And will the whole solar system maintain a position relative to the stars which surround it, similar to that which it now holds? Wild questions, it may be thought; but still they admit of something being said in answer to them. We shall be obliged, however, to dismiss them with brief notice.

The heat and light which the earth derived from the sun in the most ancient geological periods cannot have been very different from that we derive from him at present. This uniformity is a curious fact, and necessarily implies, we conceive, a continuous generation of heat in the solar mass to supply the defect arising from constant radiation. Theories have not been altogether wanting to account for the fact, but there are none, we think, which assign an adequate cause for this continued production of heat during a period of time which may probably be reckoned by millions of centuries. We are too ignorant of the nature of the sun's mass to have sufficient foundation for definite speculation. According to the present order of nature, heat is largely dissipated from the sun and stars into surrounding space; and unless there be some means by which its reconcentration may be hereafter effected, or some inconceivable cause for the generation of heat *ad infinitum* in the sun's mass, it is certain that he cannot continue for an unlimited time to radiate the same amount of heat as at present.

It is a noble conclusion of the mathematical philosopher, that under the mutual attractions of the sun and planets, independently of the extraneous attractions of other bodies in the universe, the solar system is framed to last for ever, provided always that the space in which it exists is an absolute vacuum. In such case, though the orbits and motions of the planets are incessantly varying, their irregularities are restricted within certain bounds which they are forbidden by

the law of gravity to transgress. If, however, the planetary space is not a perfect vacuum, but filled with matter—however rare and ethereal that matter may be—offering the slightest possible resistance to the motions of the planets, the doom of the system is sealed. Left to itself, its present form must terminate in some *finite* time by each planet contracting its orbit and ultimately falling into the sun. For evidence of the existence of this ethereal matter forming what is termed a *resisting medium*, we look especially to the comets, as the lightest bodies of the system, and therefore the most sensitive to the influence of such a medium. As yet *Encke's comet* is the only one which has spoken out on the subject. Its period of revolution round the sun is rather more than 1200 days, but is found to diminish by a small amount (nearly three hours) in each successive revolution. After the most careful and elaborate investigation, the distinguished astronomer after whom the comet is named can only attribute this phenomenon to the existence of a resisting medium. It would be highly interesting to have the testimony of this comet corroborated by the independent evidence of other comets. But it is only in recent years that these curious bodies have received their full share of attention from astronomers. In the meantime it may be stated, we conceive, that the prevailing opinion of philosophers is opposed to the notion of a vacuum in the planetary space.

50. Till within the last few years, the motion of the whole solar system in space, was only a matter of speculative opinion; but astronomers have now afforded evidence of this motion which leaves little doubt, we believe, on their minds. Both the direction and velocity of the motion have been estimated. The determination of the velocity must necessarily at present be vague; but supposing it to be approximately correct, it might require possibly nearly a million years for the system to traverse a space equal to that which separates us from the nearer fixed stars. Within some such period, therefore, our relative position with reference to the stars more immediately around us may be entirely altered, and the external conditions under which the earth, in common with the whole solar system, may be placed, may be greatly changed. Now, our geological prognostications must be regarded as referring to future ages, removed from the present not by one, but by many millions of years, and it becomes therefore utterly impossible to offer even the vaguest conjecture as to the mutations to which the whole solar system may be subjected in that time, arising from the circumstances now mentioned.

51. The views which we have been endeavouring to present to our readers respecting the past and future physical history of the globe, may be briefly stated. Our fundamental hypothesis is that the terrestrial mass was, at some former period, in a state of fluidity, and that state could only be superinduced by excessive heat. Thence we deduce the form and density of the earth, and the precessional motion of the pole and equinoxes. We are thus enabled, also, to account for all those geological phenomena which, by the universal consent of geologists, are referred to heat, however produced, existing at a certain depth beneath the earth's surface. Further, there must have been, from the earliest geological times to the present, a continuous refrigeration of the earth, which must still go on in future time, till the internal heat shall no longer possess sufficient energy to lift up mountains and continents, and the war between the antagonistic forces of elevation and those of denudation shall terminate in the complete victory of the latter and the universal empire of the sea. These conclusions, be it observed, rest on the assumption that there is no physical cause capable of generating heat *ad infinitum* in the matter of which the earth is constituted; and that external conditions shall not interfere with the earth's continued refrigeration for the enormous period of time which would be required for the earth to attain the ultimate condition in which a universal ocean should cover its surface.

We have seen, however, that cosmical causes may change altogether the existing relations between the earth and other bodies of the material universe, and may thus modify, we know not in what degree, the effects which would otherwise result from geological causes alone, especially, we may conceive, by a great possible modification of terrestrial temperature, arising either from a greater proximity to other suns, or the passage of the solar system into warmer regions of space. And the influence of these external causes may possibly be felt long before the globe, under existing conditions, would arrive at the ultimate state described in the preceding paragraph. Under these circumstances, we offer no opinion respecting the earth's ultimate destiny under the assumed operation of secondary causes alone. We should be ashamed of such presumption. Our purpose has been to indicate the limit towards which the physical state of the earth would tend under the unmodified action of geological causes, and also to show how the action of cosmical causes may prevent the attainment of that limit.

But, although such speculations as these may establish no positive views respecting the remote future of our globe, they

appear to us to establish a powerful argument against the theory of non-progression. The doctrine that nature is unchangeable may recommend itself, by its simplicity, to many persons as an *à priori* principle, and may possibly, in some large sense, present itself to some minds almost as a truism. But we must consider the meaning of the terms in which it is expressed, in its application to geological reasoning. If we understand it rightly in such cases, it asserts the *permanence of the existing aspect of nature*, in contradistinction to what we have, throughout this essay, described as progressive change. It is in this sense that we are opposed to this doctrine, and cannot allow the admissibility of the assumption of it as a self-evident truth, and the corner-stone of any geological theory. We believe it to be founded on restricted views of nature, and an undue disregard of the probable or possible changes above mentioned, especially those which may arise from cosmical causes. For ourselves, taking the largest view of the subject which we are capable of taking, we believe that the law of nature is that of perpetual change, great in magnitude as regards the physical state of matter, and requiring enormous periods of time for their accomplishment. We have nothing to do with discussions on the infinite extent of the material world, or on the eternity of matter; but, with respect to that portion of the universe which lies within the sphere of man's observation, whether we regard it geologically or astronomically, we can nowhere recognise the impress of eternity on the particular aspect which it now presents to us.

52. And let us now turn to *man*, regarding him independently of any revealed knowledge of his future destiny, but simply with reference to his relations with the physical world about him. Do we see in his character and position here any indication that this earth is his destined abiding-place for indefinite periods of time? We conceive that a negative answer to the question is suggested, at least, by the fact that the extent of the earth's surface and its powers of production are *finite*, whereas the tendency in human population to increase is unlimited. It is, undoubtedly, easy to conceive this tendency to be arrested, but not probably by causes consistent with the moral and physical well-being of the race. Whether human population may have increased or not during the last two thousand years, is a matter of little import, we conceive, in the question before us. We know that it is now spreading itself over many parts of the globe, under influences far different from those under which it has been heretofore extended —the influences of Christianity and of that higher civilization which must attend the pure doctrines of our religion. We

believe that this extension and increase of the civilized races of mankind will continue; and, however it may be temporarily checked by the hardships and evils to which man is subject, we can hardly understand how this tendency can be effectively and finally arrested before the population of the globe shall have approximated to that limit which must be necessarily imposed upon it by the finite dimensions of man's dwelling-place. We know not what might be the views of political economists on this ultimate condition of human population; but we feel it difficult to conceive its existence, under merely human influences, independently of physical want, and possibly of that moral debasement which so frequently attends it. In fact, those who regard man simply in his human character and in his relations to *nature*, and not in his relations to GOD, must find in his earthly future the most insoluble problem which can offer itself to the speculative philosopher. It would seem equally difficult to assign to the human race an indefinite term of existence, or to sweep it away by natural causes from the face of the earth. But it is in such questions as this that a steady faith in man's Creator and Redeemer affords to the embarrassed mind a calm and welcome resting-place. Those who believe man's introduction on the earth to have been a direct act of his Almighty Creator, will not think it necessary to look for his final earthly destiny in the operation of merely secondary causes, but will refer it to the same Divine Agency as that to which he refers the origin of the race.

In the preceding discussion of speculative views, we have endeavoured to found them, as far as possible, on observed facts and recognised principles. It is under such guidance alone that we can tread with safety those remote and obscure regions of physical science into which we have ventured to conduct our readers. It may possibly appear to some that we have almost transgressed the legitimate bounds of human speculation, and that it might be more consistent with a becoming humility to leave the future at least of the material universe, without too much curious questioning, in the hands of Him to whom alone it can be really known. But it would seem consistent with the noblest purposes of man's intellectual existence that he should employ the mental faculties which have been vouchsafed to him, in the endeavour to catch some glimpses, however imperfect, of those laws and principles on which the government of the material universe is founded. Let this be done in a modest and reverential spirit, and we are sure that it will be found to be a healthy and purifying exercise of the mind, and one of the highest sources of intel-

lectual enjoyment; and, further, when the humble and patient investigator returns, as it were, from these far regions of research, his mind perplexed and fatigued, it may be, with obscurities and difficulties, we trust that it may be permitted to him to believe that a part of the future blessedness which is promised to the faithful may possibly consist in that far larger perception of the excellence and harmonies of the material as well as of the moral world, which may be accorded to them hereafter, when the wearied mind, as well as the troubled heart, shall be at rest.

W. H.

THE QUESTIONS RAISED BY THE MUTINY.

IS it too presumptuous for a man to write about India who has never been there? It might well seem so. Yet this can hardly be, for the questions that most imperatively demand solution can be solved by Parliament alone. Into these, English politicians *must* throw their minds. And, indeed, it is the anxious wish of the Anglo-Indians themselves that the British public should think earnestly, and speak freely, upon Indian affairs. Our never having seen the country should teach us great caution, and great candour. But oceans of information lie ready at hand. Numberless able men from India are only too glad of a listener. The chief Indian questions are questions rather of general principle than of local detail. If, then, a man will study, inquire, and think diligently, he may help to get the things done that want doing. At any rate, those who are seeking to correct the errors of the Administration, and the abuses that mar the happiness of the people, would be much strengthened if they were cordially borne forward by the English press.

Nor is this a bad time for looking into Indian policy. The heart and soul of England is now turned towards India. This full tide of thought and feeling must soon ebb, and flow off elsewhere. It were a pity not to turn such enormous but transient power upon some useful water-wheels.

The topics whose discussion in England would be undoubtedly legitimate, are these. It being allowed on all hands that our government of India, though wise and benevolent, yet is a tardy, languid government—that its great lack is a lack of animation—the first of all questions is, how to give it energy? And it merits thought, whether that end could not be attained by the very opposite of the centralizing policy which now bears sway at Calcutta—by allowing more responsibility to local authorities—by giving, within fixed bounds, entire freedom to each Presidential Government—by forming those Governments, not of

a Governor alone, combining all Legislative and Executive functions in his own person, but of a Governor, surrounded by a Legislative Council of experienced Anglo-Indians, aided possibly by some native gentlemen—by holding out the several Governorships, and the Governor-Generalship itself, as prizes for the highest administrative ability displayed in India; and, lastly, by seating the Supreme Government in the Himalayas, instead of in the hot damps of Calcutta.

But if all this be pooh-poohed—if it still be thought well to administer the five great provinces of India, not on the spot, but through Calcutta, and from London—then comes the question whether that Home Government is the most effective that could be devised.

These are the chief topics on which I am desirous to stimulate discussion. For no one, I think, can inquire into the facts of our dominion over India without feeling that her British rulers are sincerely anxious to do their best by the people; they would hail reforms gladly; but the frame of government is so lanky, so cumbersome, that nothing of consequence can be thought out, or worked out, without tedious delay.

Before going further, however, it may be well to set before the reader the evidence as to the causes of the outbreak, which lies entangled amid a mass of matter, in the Parliamentary Papers on the mutiny. This evidence has not hitherto been laid out at its full length. It abounds with interest. And it seems to bring out strikingly the fact, that the insurrection did actually come of the cartridges. Granting that the Sepoys had been uneasy before, allowing that the annexation of Oude awakened disaffection, allowing that possibly we were conspired against, yet there seem potent reasons for thinking that the cartridges were not a pretext, but the real cause of what took place; that, not improbably, had there been no fat, there might have been no mutiny.

This looks shallow. 'The fate of empires does not depend on pigs' fat,' said Mr. Disraeli, amid loud applause. The public re-echoes the same view. And, certainly, the name of pigs' fat sounds despicable in our ears—too despicable to be the mainspring of such mighty events. Though we are all aware of the Mahometan horror of swine's flesh, and the Hindu horror of the flesh of cows, yet it is difficult for us to realize the intensity of this feeling. But its force, evidently, is overwhelming. Dubois, the highest possible authority on such a point, after speaking of certain breaches of Hindu law for which forgiveness might possibly be attainable, adds, 'But very different would be the case of one who should be so abandoned as to eat the flesh of a cow,

supposing the idea of such enormous wickedness to enter into the heart of a Brahmin or any other Hindu of respectable caste. If such a portentous crime were by any possibility committed, even by compulsion, the abhorred perpetrator would be beyond all hope of redemption.'

'The mere Englishman,' says another writer (said to be Sir Justin Sheil), '*cannot conceive* the horror of a Hindu, be his caste high or low, at the thought of defiling his lips with the grease of a cow, or the disgust of the bigoted semi-Hindu Mussulman of India at the same employment of the grease of pork.'

Evidently, therefore, there would be no strangeness in their bursting into revolt, if once possessed with the idea that we were planning to put the fat of those animals between their lips. Their fancying us capable of such a scheme seems odd enough; but we all know how readily the most preposterous notions are swallowed, when they have once got vogue. At the village of Ketteringham, in Norfolk, five years ago, the people were thrown into a painful state of excitement by the report, which they seriously believed, that the Queen had ordered all their children below two years old to be killed, in order to make a bath of blood for the Prince of Wales, 'because he hadn't his right know.' A thousand similar cases might be collected, of the rapid spread, through ignorant masses, of the strangest illusions. And one highly important element in this matter seems not to have been fully appreciated. The dread of committing sacrilege was enough to raise the Sepoys into revolt. But this was not the only, this was not the main, cause of their excitement. Their fear was not merely of breaking a religious law, but of being turned out of human society. The loss of caste is not simple excommunication. Nor is it a mere vexation to a man's self-consequence. It is an awful calamity. 'Of all sorts of punishment,' says Dubois, 'the most severe to a Hindu is that of being cut off and excluded from his caste. It is, in truth, an insupportable punishment. It is a kind of civil excommunication, which debars the unhappy object of it from all intercourse whatever with his fellow-creatures. He is a man, as it were, dead to the world. He is no longer in the society of men. By losing his caste, the Hindu is bereft of friends and relations, and often of wife and children, who will rather forsake him than share in his miserable lot. No one dares to eat with him, or even to pour him out a drop of water. If he has marriageable daughters they are shunned. No other girls can be approached by his sons. Wherever he appears, he is scorned and pointed at as

an outcast. If he sinks under the grievous curse, his body is suffered to rot on the place where he dies.'

There is no room, then, for surprise at any degree of alarm having been felt by Sepoys, when the report flew about like wildfire that the new cartridges were greased with animal fat. They were not simply in danger of affronting their gods, but of becoming outcasts — of finding themselves plunged into a loneliness of the most terrible kind. One or two petty incidents heated their anxiety red hot. A native workman, employed in the magazine in which the cartridges were made, asked a Sepoy to give him water from his lota. The Sepoy refused, observing that he was not aware of what caste the man was. The workman immediately replied, 'You will soon lose your caste, as ere long you will have to bite cartridges covered with the fat of pigs and cows.'* This anecdote spread far and wide, and the Sepoys felt as if they were sliding down towards a precipice. It appears, however, that they tried remonstrance before resorting to force, for their protection from the outrage which they imagined to be awaiting them. Major Bontein reported, on January 23rd, that at Dum Dum he found it necessary to parade the men and call for any complaints they might wish to prefer. 'At least two-thirds of the detachment immediately stepped to the front, including all the native commissioned officers. In a manner perfectly respectful, they very distinctly stated their objection to the present method of preparing cartridges for the new rifle; the mixture employed for greasing cartridges was opposed to their religious feeling, and, as a remedy, they begged to suggest the employment of wax and oil in such proportion as would answer the purpose required.'† So, too, Captain Boswell reports, from Barrackpore (Feb. 4th, 1857), that he took the cartridges into the ranks, and, having broken one open, he asked the men whether they could see anything objectionable in them. 'Their reply, made in the most civil but soldier-like manner, was, that the paper was not the same as that used for the old cartridge, and that they thought there was something in it.' On receiving these reports, the Governor-General, who, I must say, paid serious and prompt attention to the subject, at once ordered that the cartridges should not be greased in the magazine, but that the Sepoys should be supplied with unobjectionable materials, and should grease them with their own hands. Unhappily, however, the suspicion that had arisen was not to be so easily allayed, and the

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* *Parl. Papers.* Inclosure 5, in No. 1.
† *Parl. Papers.* Inclosure 6, No. 1.

men were seized with the fancy (alluded to in Captain Boswell's letter) that not merely the grease but the *paper* of the cartridges itself contained the deadly elements. A Court of Inquiry, therefore, was ordered by Lord Canning to investigate the matter; and they examined several of the native officers, each one of whom expressed suspicion of the paper. 'There is grease in it, I feel assured,' says Jemadar Golaub Khan. 'Chaud Khan objects to this paper being used, as every one is dissatisfied with it, on account of its being glazed, shining like wax cloth.' Subadar Khadu, indeed, saw nothing objectionable in it; but, when asked if he would object to load a musket with it, he replies, 'I would use it *if there was no grease in it.*' In short, as General Hearsey wrote to the Government, the suspicions of the men were fairly aroused on the subject of cow and pig fat, and it was quite impossible to allay them. That excellent officer, in truth, was so deeply impressed with the peril of the case, that, in one of his dispatches to the Government at Calcutta, he reminds them of Sir Charles Metcalfe's words, 'I expect to awake some fine morning, and find that India has been lost to the English Crown.'

Unhappily, however, although the cry of 'Breakers ahead!' was so clearly raised, and the Governor-General was awake to the danger, nothing was actually done to wear the ship before she struck. Lord Canning, indeed, was not to blame. We have seen that as soon as the Report reached him, he ordered the grease to be applied by the Sepoys, and summoned a Court of Inquiry. And further, on March 15th, he issued an official request to the Commander-in-Chief, that in loading the soldiers should in future break off the end of the cartridge with the hand, instead of biting it off, according to the needless method derived from former times. But it seems to me evident that, by some fatal negligence, this wise suggestion (which came originally from Lieutenant-Colonel Hogge and General Hearsey) was never acted upon by the Commander-in-Chief. And the consequence was that which, with all these facts before us, we cannot but feel to have been inevitable. The troops broke out into mutiny at Berhampore, Barrackpore, Lucknow, and finally at Meerut; and I will show that, in each of these cases, the undeniable cause of the outbreak was their panic about the cartridge.

The first of these mutinies took place at Berhampore, on February 26th, when the men seized their arms, but eventually were induced to lay them down again, and were disbanded without difficulty.

'The men have since stated, in a petition addressed to the Major-General commanding the Presidency division, that for more than two months they had heard rumours of new cartridges having been made at Calcutta, on the paper of which the fat of bullocks and pigs had been spread, and of its being the intention of the Government to coerce the men to bite these cartridges; and that, therefore, they were afraid for their religion. They admit that the assurance given to them by the colonel of their regiment satisfied them that this would not be the case; adding, nevertheless, that when, on the 26th of February, they perceived the cartridges to be of two kinds, they were convinced that one kind was greased, and therefore refused them.

'The commanding officer, on hearing of the refusal, went to the lines, assembled the native commissioned and non-commissioned officers, and explained that the cartridges were unobjectionable, and had been left at Berhampore by the 7th Regiment. He instructed them to inform their men that the cartridges would be served out in the morning by the officers commanding companies, and that any man who refused to take them would be tried by a court-martial, and punished.

'This occurred at eight o'clock in the evening.

'Between ten and eleven o'clock, a rush was made by the Sepoys to the bells of arms; the doors were forced open; the men took possession of them and accoutrements, and carried them to their lines.' *

They proceeded no further: and, I ask, could anything be more clear than that, in this case, the absurd suspicion of the Sepoys about the cartridges was the sole cause of the outbreak? The next mutiny that occurred was the passive mutiny of the 34th Native Infantry, in offering no assistance when a Sepoy named Mungul Pandy, in a state of frenzy, wounded Lieutenant Baugh, who was trying to arrest him. In this instance, Lieutenant Baugh is asked by the Court how he accounts for the altered manner and bearing of the native officers and men towards their European officers? and he replies, that he noticed the change in December or January last, about the time that the general order was received for the formation of the new Rifle Depôts, and the succeeding introduction of the new cartridges; 'and to that cause,' he says, 'I attribute the change in question.'

This incident occurred in March. During April, no less than thirteen incendiary fires broke out at Umballah, in the regimental lines and buildings; and the Chief Commissioner of the Cis-Sutlej States expresses his entire conviction that 'these arsons are all caused by the disaffection which has arisen from the introduction of the new cartridge.'

* General Orders by the Governor-General in Council.

Then, on May 2nd, occurred the mutiny at Lucknow of the 7th Oude Regiment, in refusing to bite cartridges when ordered by its own officers, and again by the brigadier.* No other cause is hinted at.

The official note made by Mr. Dorin (the senior member of Council), upon the last occurrence was, that, 'the sooner this epidemic of mutiny is put a stop to, the better. Mild measures wont do. A severe example is wanted.' This advice was exactly as if a man should tell his friend at the heels of a kicking horse, to keep it quiet by a smart blow on the hocks. Mr. Dorin's idea was, that we, in other words, a handful of European officers here and there, supported by a few English regiments, were to force an army of 250,000 Hindus and Mussulmans, to punish themselves for their superstitious follies. However, the notion of a little violence is always pleasing. It looks like energy. In accordance, therefore, with Mr. Dorin's suggestion, severe measures were now to be taken. It being known that at Meerut the troops were in such a state of trepidation about the cartridges, that they were determined not to use any cartridges at all, for fear they should be tricked, General Hewitt resolved to bring the matter to a point; and being supported by two European regiments, the 60th Rifles and the 6th Carabineers, besides two troops of horse artillery, and a light field battery, he ordered a parade of the 3rd Cavalry, and served out to them the same old cartridges which they and their fathers had always used. But so inflamed were their suspicions that eighty-five out of ninety men refused to receive them. These mutineers were immediately tried by court-martial, and condemned to imprisonment, with hard labour, for periods varying from six to ten years.

The following letter, written before the final explosion of May 10, by a lady at Meerut, gives a vivid picture of the state of feeling which led to it. She begins by relating that the men had humbly petitioned not to be forced to use the obnoxious cartridges, but Colonel —— injudiciously ordered a parade of the skirmishers of the regiment:—

> Next morning, at daybreak, the skirmishers, according to order, appeared on the parade ground, the Rot Duffodars carrying the fated cartridges in bundles. Colonel —— presented himself before the men, harangued them in bad Hindostanee, telling them he would report them and make them famous if they fired these cartridges, and that he would show them how to open them with

* *Report to the Government of India from Lucknow.* Inclosure 1, No. 14. App. p. 209.

their hands, instead of biting them with their teeth; but the poor man's eloquence was lost on them. There was no confidence towards him in their hearts, and his words only mystified them. He bade the Havildar Major to take a cartridge and fire it. He obeyed. They were next offered to the Havildar Naicks and troopers composing the skirmishers, but eighty-five of the ninety refused them. Among the five who ventured to take them was our old Havildar Heirah Sing. Others amongst the men may have been inclined to take them, but feared deserting their party. Strange to say, two of Colonel ——'s pets were of those who refused. As nothing could be done with the men, Colonel —— dismissed the parade, giving orders that the eighty-five who had disobeyed him should remain in the lines, but do no duty till further orders.

The writer adds:—

We cannot deny that they disobeyed orders; but let the prejudices of their creed be considered, and the conditions on which they serve us (which are, that their faith shall never be interfered with), and that the treatment they uniformly meet with leads them to expect attention to such an appeal as they had tendered. The men have a strong case in their defence, if they be allowed to defend themselves. If they are to be dismissed without defence, there are whispers that the whole will mutiny, and be joined by the other native troops in the station.

No one of these four mutinies had been attended with violence. But things had come to a point in which such passive resistance could no longer be expected. The Sepoys felt that the Government were resolved to be masters, and they were equally resolved not to submit to what they foolishly deemed an irreparable outrage.

Under these circumstances, it was a sheer trial of strength between the two. Open war became inevitable, and the fearful outburst and massacre of May 10th, at Meerut, followed at rapid intervals by the revolt of the whole Bengal army, showed the amazed authorities the extent of the struggle in which they had unwittingly engaged.

How clearly those authorities perceived the nature of the case is evident from the General Orders of the Commander-in-Chief, issued on May 14th, in which he says: 'I still perceive that the very name of new cartridges causes agitation; and I have been informed that some of those Sepoys who entertain the strongest attachment and loyalty to the Government, would still be under the apprehension that their family would not believe that they were not in some way or other contaminated by their use.'*

* Inclosure 189 in No. 19, p. 357.

We have seen, then, how terrible a calamity it would have been to a high-caste Hindu or Mussulman to be even *suspected* by his family of having put cows' or pigs' fat to his lips—that it would have involved him, not merely in sacrilege, but in ruin. Then we have seen that the nervous trepidation of the Sepoys about the cartridges was reported from various quarters, and that they employed 'respectful and soldier-like remonstrances' long before they proceeded to any act of resistance. Further, that before May 10th, they broke out into mutiny in four different places—that in each of those cases, as well as in that of the fires at Umballah, their disaffection was officially attributed to this same feeling of alarm. Also that those four mutinies were of a passive, not of a violent kind, as they would have been if intended, not for their own protection, but our overthrow.

To all this evidence, which to my mind is conclusive, it may be added, that Mr. Greathed, late Commissioner at Meerut, received instructions to try and ascertain from the wounded Sepoys or deserters the real cause of the revolt. In every case the reply was the same—'The cartridge.' And it is said that a distich attributed by the natives to the King of Delhi has vogue amongst them—

'The mighty English, who boast of having subdued Rouss and Irân,
Have been vanquished in India by a single cartridge.'

It is also well worthy of remark, that the armies in Madras and Bombay, which have remained staunch, were never exposed to the same trial as the Bengal army, none of the Enfield rifles having apparently been sent out, except to Calcutta. We all know how fearfully the Madras Sepoys exploded at Vellore, when *their* caste was rashly meddled with. Had the cartridges been offered first to the Madras or Bombay troops, it is highly probable that they would have gone wild, while perhaps the Bengal army would have looked on, as *they* do now, with indifference.

But for the horror excited by his subsequent acts, a great deal of sympathy might have been felt for the Sepoy, in the painful position in which he was placed. On the one hand, was the dread of the severe penalties for mutiny; on the other, the still more terrible apprehension that he might find himself suspected, even though unjustly, by his caste, of committing, what Dubois calls, 'the enormous wickedness' of eating cow or pig fat, and being consequently 'debarred from all intercourse with his fellow-creatures,' and 'scorned and pointed at as an outcast.' It is plain, too, why the Sepoy could not be quieted by assurances from the Government as

to the purity of the cartridges, because he still feared that his caste would not be satisfied, even if *he* were.

But it is replied, that the fictitious nature of this pretext was made plain by the readiness of the Sepoys to use these very cartridges, as soon as they were wanted, *against us*. But this I believe to be a mistake. The greased cartridges were for the new Enfield rifle. Now scarcely any of these had been actually given out, except to the English troops. The natives mutinied in the act of refusing them. There is no reason but a vague rumour for supposing that the mutineers have used the greased cartridges. But even if they did, they would have *broken*, not *bitten* them—a distinction to which we are told in the official papers they are perfectly alive.

Surely, with all these facts before us, we can hardly hold to the notion that the cartridges were merely a trifling pretext, or a secondary incident, of an insurrection which arose from much deeper motives. The evidence seems to show that the panic excited by them was the actual cause of the outbreak. In all likelihood, indeed, the silly tale of the fat was spread abroad by conspirators. But what I have sought to show is, that the army was aroused against us, not by the wish to upset our dominion, not by abhorrence of us and our creed, but by a paroxysm of alarm for their caste.

Undoubtedly, other incidents had already made the Sepoys anxious. Christianity and civilization were gaining sway. Old things were drifting off. A new era was setting in. But was it not the cartridge which turned uneasiness into terror?

I have been long, perhaps tedious, in dwelling on this point, because if we do not see with precision into the causes of this mutiny, we shall flounder about in our methods of avoiding mutiny hereafter. And at the present time a loud outcry is heard for a new principle of Government in India. It is said that our indulgent system has proved a failure—that we have broken down from our tenderness towards Indian superstition—that a clear avowal on our part, as rulers of India, that we hate its heathenism, would have been wise, as well as manly; and that we ought no longer to pay it any deference whatever.

Now, plainly, as regards the reconstruction of the Bengal army, we need only consider our own convenience, in the terms of enlistment we lay down. If we like to say that every Sepoy shall do the whole of the work usually required of soldiers, why no one can find fault with us. We should probably in that case obtain a more obedient set of

men, and run less risk of mutiny than now, when we spoil discipline by humouring every piece of Brahminical pride and prejudice. On the other hand we might, perhaps, thereby lose the services of the high-caste men. Seeing what we have seen in the last few months, this may be thought no great evil. But it must be remembered that these men have some martial virtues of rare value. They are said to be much more brave and high-spirited than the low-caste men; and we are told that 'The Bengal soldier is the most orderly, the most tractable (CASTE and PAY APART), and the most thrifty of human beings. No broils disturb the camp or cantonments, theft is unknown, millions of treasure are safe in his custody, no roll calls are required, and supervision is necessary only to make him exact and energetic in his military duties, for naturally he is slothful and sluggish in their performance. His chief fault is a fondness for a row in the Bazaar. . . . . The high-caste soldier drinks nothing but water, consequently drunkenness is unknown.'*

The question then whether we should insist on conditions of enlistment which might keep high-caste men out of our ranks, is merely a question of convenience. There would be nothing wrong in our doing so, and perhaps it might be prudent. At the same time we must not fancy that the soul of the low-caste Hindu is a *tabula rasa*, and that we can do what we like with him. He has not the anxiety of the Brahmin (who is in truth the gentleman) to avoid degrading himself by manual labour; but he would be just as soon flung into a paroxysm of fury if his religious feelings were lacerated —for instance, by requiring him to put cows' grease to his lips.†

The idea, however, which has some vogue, is, that not merely towards our army, but towards our Indian Empire, we should henceforward stand upon new ground,—that caste and other superstitious observances among our subjects are lies, vile mischievous lies, and that we as Christian rulers of the land are bound to set our heel upon them. This view has the merit of being clear, however mistaken we may deem it. But what the public would be at, it is less easy to make out. That august body would seem to repudiate the idea of interfering with Hinduism; yet is very wroth with our Indian Government for not being more definitely Christian. No one, how-

* *The Mutiny in the Bengal Army*, p. 14.

† The General Service Order of July 25, 1856, required all recruits to enlist for foreign as well as home service, in spite of the high-caste feeling on the subject of crossing the sea. But this reform is thought by some good judges to have been one of the causes of the mutiny!

ever, is good enough to tell us what practical change should be made in its character. Stories, indeed, are cast in its teeth about its countenancing idol worship and discouraging Christianity. But these are tales, some of forty, some of fifty, some of seventy years ago. Undoubtedly both piety and self-respect command us not to give one tittle of *positive* support to heathenism. In old times our rulers did so; but they do so no longer. Certainly, if any traces of that policy remain, they should be swept away. The main charge, however, made against the Government, as to its conduct at this day, is that the Bible is not taught in the schools founded by Government. As to this, we should remember that Government largely aids the schools founded by benevolent individuals, in which the Bible is read. But its own schools are not designed for the general elevation of the Hindu mind, but for a specific purpose. Parliament, as I understand, expressed a wish that native Hindus and Mahometans should have a larger share in the administration. For this a somewhat higher education was deemed necessary than what they would have received in their own schools. Our Government therefore undertook to give them the requisite training. But obviously the whole idea of the scheme would have been defeated (however much other objects might have been attained), had they been Christianized in the process. We wanted the natives to feel that they—the Hindus and Mahometans—were not shut out from the management of their country: and we volunteered to train them for the purpose; but only discontent could have been excited if the offer had been accompanied by the condition that they must be imbued by the way with Christian doctrine.

But there are multitudes of persons, especially among the clergy, who do not scruple to explain these events, by telling us that they are a judgment upon us for our wicked acquiescence in the idolatry of our subjects! It is strange that men should dare to dogmatize upon the intentions of Providence; and much more that they should inform us that the massacre of innocent men, and the fearful barbarities inflicted on women and children, were ordained by a fiat from the Most High, in order to punish us at home for certain neglects and omissions. To me it sounds very like blasphemy to attribute to our Father in heaven conduct which cannot be reconciled with justice and mercy. And surely if the world, the flesh, and the devil are strong in the heart of man, the crimes that spring from them are not to be laid at the door of Providence.

I dissent, then, from those who infer from these calamities

that our Indian Government ought to come forward as the enemy of Indian superstition. Proselytism is no part of the work which a Government has to do. That is work for the Church of Christ. Let the whole Christian Church strive to turn the Hindu to the knowledge of the truth; but the meddling of the Government will do no good, and great harm. The Hindu evidently has no fear of the missionary: but the idea that his rulers were seeking to Christianize him would awaken his terror at once, for the Oriental cannot conceive that those who have power will not use it with unscrupulous violence, for any purpose they wish to attain.

When we want to know how to avoid insurrection hereafter, the best way is to look back and see what has caused insurrection hitherto. Now, can a single instance be adduced of any mutiny, since the days of Clive, which has not been provoked by some unfairness towards the Sepoy with respect to his pay, or by some want of care with respect to his religion? No such example can be brought forward. Then, the natural conclusion is, not that we are to be less, but that we are to be more sedulously watchful on these points. It is one of the strangest things in all history, that during a hundred years, the rule of the English, aliens in blood, aliens in nature, aliens in colour, aliens in religion, has been maintained without any difficulty, not only over the whole civil population of India, but over a huge body of armed men. Surely this tells far more in favour of the principle that has guided us, than an outbreak at the end of that time, in one-third of our territory, tells against it! And what has that principle been? It has been, to treat the superstitious feelings of the natives with respectful forbearance—except where they led to cruelty. In those cases we have,—as I think nobly,—run some risk, rather than allow atrocities. The more this principle is pondered, the more does one feel its wisdom and goodness, the more anxiously does one hope that it will never cease to be the cynosure of Indian Government.

At the same time, though I believe this principle of conduct to be of first-rate consequence, we should omit no reform that would remove discontent; and we should likewise provide all means of forcible suppression. With respect to the former, it is true that not a single word has been uttered by the mutineers, nor yet by the native bystanders, to the effect that the rebellion was excited by our misgovernment and oppression. This is highly gratifying; and certainly he who studies the history of our conduct in India cannot but acknowledge that it does credit to our energy, to our intellect,

but, above all, to our humane feelings, and anxiety for the public good. It is not true that our rule there has been a selfish and rapacious one. We have set ourselves with great earnestness to making the people prosperous and contented. On the whole, comparing the mode in which India has been ruled by the English, with the way in which it was formerly ruled by the Mahometan princes, or with the way in which other countries have administered their foreign conquests, we have little reason for national remorse. Nay, we have solid ground for national satisfaction. Every year, too, our Government becomes more enlightened, and accomplishes more for the good of India. Reforms are continually projected, and, by degrees, brought to bear; and the prospects of the nations under us brighten day by day.

When we candidly consider the efforts made by our rulers in India to abolish Infanticide, to abolish Thuggee, to abolish Suttee, to abolish Dacoitee; their strenuous and costly exertions to extend education; their anxious (though unsuccessful) endeavours to collect their revenue in a way convenient to the habits of the people; the stupendous public works they have undertaken—such as the reconstruction of the Western Jumna Canal, 425 miles long, and spanned by 213 bridges; the Eastern Jumna Canal, 'with its broad road smooth as an English lawn, its double rows of trees drooping over the stream, its long, graceful sweeps, its rich bordering of the most luxuriant crops, and its neat station-houses;' the great Ganges Canal, which is twice the length of all the irrigation lines of Lombardy and Egypt together!—528 miles long, 170 feet broad by 10 feet deep, costing a million and a half of money; the Baree Doab Canal, 465 miles long; as well as a multitude of smaller works of irrigation, and of navigation too; then, the improvement of harbours, the introduction of railways, the establishment of the electric telegraph, and of the uniform three-farthing postage; the formation of roads — such as the great Trunk Road from Calcutta to Peshawur, 'carried through every natural difficulty that can be conceived,' besides an immense number of minor highways;—candidly weighing all this, and much more, how can we wring our hands in humiliation, or join in the vulgar outcry against those who have disposed of the fate of India?

Let it be remembered, too—and this must strike the student of history as the rarest as well as noblest of the merits that can adorn a conquering race—we have shown, we have signally shown, the self-control, the honesty, the clemency, the justice, which our religion might be expected to inspire. The story of our Indian rule is the story of dominion main-

tained by kindness, honesty, and truth, no less than by sense, vigour, and bravery.

Hear what a man writes who has been long in India, and studied it deeply—a Frenchman, too, whose bias might have been the other way. After owning that some members of the Indian civil service have been a disgrace to it, M. de Valbezen goes on:—'Nous disons seulement qu'en moyenne comme corps, par son integrité, ses lumiéres, son expérience, il est à la hauteur de sa mission, que jamais magistrats plus intégres, collecteurs plus désintéressés, juges plus indépendans, n'ont veillé sur le sort des populations natives, qu'en un mot la très grande majorité du service civil représente dignement dans l'Inde une des nations qui marchent en tête de la civilisation Européene.'

The public spirit, the benevolent intentions, the noble achievements of those who have governed India, are undeniable. They have done great things for the people. They would fain do much more. And yet, on the other hand, bitter complaints are heard, that reforms are stagnant—that boundless evils remain unredressed—that the people, in vast tracts, are in misery. We are told, on high authority, that the condition of the peasants is mournful, that great districts have become desert, that others have sunk from affluence into pauperism. The methods of obtaining revenue are ruinous to the husbandman, yet no effort seems made to change them. Public works are pushed forward with fitful zeal, not steadily. Above all, justice has not been secured. Life and property are not protected. Our native police are thus described by the Parliamentary Commissioners:—

'The police establishment has become the bane and pest of society—the terror of the community—the origin of half the miseries and discontent that exist among the subjects of the Government. Corruption and bribery reign paramount throughout the whole establishment. Violence, torture, and cruelty are the chief instruments for detecting crime, implicating innocence, and extorting money!'

Now, we may be quite sure that, in the long run, nothing will root our dominions firmly, except a deep consciousness in the people of India that it gives them security, justice, and peace. *This result is not yet attained.*

Large excuse for these shortcomings is to be found in the fact of our anomalous position, as rulers over 180,000,000 people alien to us in every respect; and in the distraction and expense of our frequent wars; and also in the want of a high moral tone among the natives, making it difficult to entrust them with important administrative duties. Still, a

remedy must be found. And none can be found, except that of a more prompt, a more animated administration. And how is this to be got?

First of all, it will be in vain to expect any large improvement in the government of India so long as the Supreme Council at Calcutta is allowed to strip every one else of power, and arrogate the sole authority to itself. It is most natural that it should do so. There never yet existed an almost despotic power which had the sense and self-control to show a generous confidence in subordinates. Unless a check be placed upon them from without, it will never spring up from within. But this is a point of vast importance; and we may trust that these events will indirectly lead to the correction of an evil which has been rapidly increasing of late years. The four members of the Supreme Council, below the Governor-General, seem to have formed a theory that all wisdom and ability resides in them, and that no other human being in India has the right to exercise his judgment about any matter whatever.* A more ruinous system than this to all good government it would be difficult to conceive; and if the expression of public opinion by the press is to be also choked, the corruption of our Indian administration is merely a matter of time. It is not credible that a council of five gentlemen, two at least of whom have seen their best days, and one is a stranger to the country, can work in brilliant style the whole business of so vast an empire, and that, too, under a tropical sun. Precisely similar was the system pursued in France before the Revolution; and De Tocqueville's account of the result is certainly not encouraging.

Much more responsibility with regard to the *details* of administration ought surely to be left in the hands of the local authorities. But it might be well to carry this principle yet further. At present, the five great and perfectly distinct countries (for such, in fact, they are) of Bengal, Madras, Bombay, Hindostan, and the Indus Territories (Scinde and the Punjaub), are all entirely subject to the Supreme Council at Calcutta. Now, this is right as regards those questions which must be general to the whole Empire, such as

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* The extent to which the council has superseded every one else is incredible. As an illustration, in the mutiny at Barrackpore a native officer behaved with 'the most conspicuous gallantry, by which the lives of the adjutant and sergeant-major of the regiment were saved.' General Hearsey promoted him on the spot. For not first procuring their sanction, the Council give the general a solemn rebuke.' —*Parl. Papers*, App. p. 92.

questions of peace and war. It is also true that the revenue must belong to the whole body, or else one of its limbs would be rich, while another would be poor. But, with these exceptions, it would be of unspeakable, of immeasurable good, to give each Presidency a really independent Government.

At present, as the Chairman of the East India Company himself stated last session in Parliament, if any gentleman—say a civil servant in the Presidency of Bombay—sees any important improvement that might be made, he first of all has to lay his scheme before the Governor of the Presidency. This Governor has to lay it before the Governor-General in Council. This Governor-General in Council has to lay it before the Court of Directors. That Court of Directors has to lay it before the Board of Control. That Board of Control may correct it, and re-lay it before the Court of Directors. If the Court of Directors approve these corrections by the Board of Control, orders may then be sent to the Governor-General, who transmits them to the Governor, who may then allow the public-spirited officer to carry them out—only that, unluckily, he is a bedridden old man at Bath, before the process is gone through!

Now, where is the man who, with the thermometer at 95°, will set himself heartily to think out and force through reforms, when he must carry them on his back over sloughs and sand-hills? Such a system as this is ruin. Slow government is *bad* government. If our system be made up of checks, without motive power, nothing can be looked for but a most languid progress, if progress at all. Our sentiments may be noble, our hands pure, but little can be done to make the people happy, so long as every reform has to be sat upon by the local Governor—has to be sat upon again by the Supreme Council—has to be sat upon, a third time, by the Directors—has to be sat upon, a fourth time, by the Board of Control—and comes out, in all likelihood, not hatched, but flattened, by this repeated incubation.*

Should not then the Governments of these five kingdoms (as they may well be called) be left entirely free to adopt at once

* Having alluded to the Board of Control, I cannot forbear expressing my regret that one or two of our best periodicals should have made violent attacks on Mr. Vernon Smith, though absolutely without bringing a single specific charge against him, except that of being called Smith! It is not fair to discourage a hard-working statesman, at a moment of extreme anxiety, by such bootless fault-finding. No one indeed has attributed the mutiny to any shortcomings on his part. Nor has any aspersion of that kind been thrown on Mr. Mangles, who is said to be a very efficient chairman of the East India Company.

whatever improvements, and to pass whatever laws, they may deem needful, without curbing them by the authority of those who can have little personal knowledge of the affairs in question? If they are to wait for sanction after sanction to everything they do, the result must and will be, that they do nothing. The mere feeling that no reliance is placed on them, benumbs their powers. True, however, that each Presidency must not absorb the whole of its revenues. But fix a limit. Allow to Madras, to Bombay, to Bengal, to the North-west Provinces, to the Indus Territories, a certain defined amount of revenue for all civil purposes. Then, leave it wholly to their rulers to make the most of that income—to use it to the best of their discretion, so as to surround themselves with the utmost amount of prosperity. To cross these bounds of expenditure, they might seek leave from the Governor-General in Council.

But then it would come as an inevitable corollary from all this, that the local ruler must not be, as now, a Governor who combines in his single self the Executive and Legislative functions. No Administration can ever come within a thousand miles of perfection till these two functions stand apart. To rule in first-rate style, there must be a body of men to think, and one man to do. At Calcutta, this principle has been admitted. The construction of the Government there is based on it; thus:—The *Supreme* Council consists of the Governor-General and his Councillors. It is called the *Executive* Council when composed of the Governor-General and four members, civil servants of the Company. It is called the *Legislative* Council when the Governor-General, besides these four, summons the Commander-in-Chief, the Chief Justice, and some other members, civil or not, appointed by the Company.

If this mere germ of a true Governmental system be developed at Calcutta for Bengal, and if similar institutions be established for each of the other existing and future Presidencies, we should cease to hear that reforms in India are for ever coming, but never come. Internal legislation, instead of crawling like a toad, would advance with due speed and boldness. Blunders would, of course, be made; but blundering is better than stagnation.

As to the form which such Legislative Councils should take, and the degree to which the Governors should be put under them, I cannot pretend to offer an opinion; but the suggestion may perhaps be made, that *every* officer, civil or military, might have the right to a seat in it after twenty years' service in the country. The Governor might also be allowed to select a fair proportion of younger men exclusively for this most important work, and perhaps some leading native gentlemen

might be called in too. If a moderate salary were allowed to the members, it would be an inducement to many men of great ability and experience to remain in India, giving the country the benefit of their advice, instead of wasting their energies, as so many now do, at some watering-place, where they and their habits of statesmanship are of no avail. Experience, so peculiarly necessary in the administration of a strange country by aliens, is now carried away just when it has become consolidated into wisdom.

Depend upon it, it is of infinitely more consequence to get India governed in India, and to obtain the assistance of our most able and experienced servants there in devising better legislation, than to turn power over from the Court of Directors to the Board of Control. I do most earnestly hope that all who seek the good of India will ponder this matter deeply. It seems not to have attracted attention. The public eye has only been drawn to the question, whether the East India Company should retain any share in the administration of that empire; and, strange to say, the democracy themselves are wroth at the idea of "a parcel of traders" being entrusted with the functions of government. It seems to be fancied that the Directors pocket the revenues of India! Just as if the dividends of the East India Company were not of a fixed amount, and the Indian revenues did not go solely into the public chest. Many people seem actually unaware that the Directors have no connexion of a mercantile kind with India, and have only to do with her administration.

Now, as I have been arguing, it would be far better to leave that administration to Governors and Legislative Councils *in India herself*. But if that may not be; if our mighty dependency is still to be managed from ten thousand miles away; if this preposterous, this destructive system, is to be continued, then indeed must we bestir ourselves to make the best of this very bad job. And far be it from us rashly to sweep off the Court of Directors, and leave all in the hands of a Cabinet Minister for Indian Affairs. No folly could be greater than that of casting overboard those who, generally speaking, have lived in India, and have therefore some sort of experience. The help of such men as Messrs. Mangles, Shepherd, Peel, and others, could ill be dispensed with. On the other hand, great and grievous are the evils that come from the double Government—from having everything passed through two separate sieves—one in Cannon-row, one in Leadenhall-street. No one knows the prodigious amount of harm that has been done to India by the delays and discouragements which must clog administration, when every topic has to be

fingered by so many independent hands; and the result is stated to be, that ordinary business *is not despatched within half a-year*, while matters of grave moment are put off till that morrow which never comes.

These considerations naturally suggest that the Court and the Board should no longer govern *separately*, but *in conjunction*, by combining them into one Council, or Senate, for the administration of Indian affairs. Then the Cabinet Minister, who would, of course, preside, would be surrounded by experienced councillors in his deliberations, while in action he would stand alone. He would be the head of the Executive of India; the Council would be its Parliament.

But how is this Council to be formed? Here again, with some modification of the former case, it might be advisable for every man to have a seat in it who has passed through the *superior* civil or military offices in India. All the Generals, Chief Commissioners, Residents, Governors, Judges, and other high officials who have returned from India, might be called to this Assembly. And further, the Cabinet Minister should have the power of nominating a certain number; and the Directors of the East India Company could have seats as well. Thus an Assembly would be formed in which all the highest wisdom and most varied experience acquired in the performance of public duties would aid in promoting the well-being of India. Sub-committees would, of course, be formed, for the investigation of leading questions. In this way we should really have a Deliberative Assembly for India—an Assembly, too, in which every portion of that great empire would be represented by enlightened men.

But whether we give the dominion to the authorities in India, or still require them to submit to other men in England; in any case, the Deliberative ought to be separated from Executive functions; and the former should reside in a body—the more enlarged the better—of men of proved ability and experience. Nor ever, except in very special cases, ought their deliberations to be secret. The more light thrown on their sayings and doings the better. Nay, even if no improvement be made in the constitution of the government of India—even if things be left just as they are—yet at any rate the one reform might be let in, that the proceedings of the Court of Directors should be reported. The Directors need not fear that publicity would lower their dignity. Nay, the more their discussions drew the public eye, the higher would be the value set on them. At present not one man in ten thousand has the faintest idea as to what the East India Company is, or does, or who its heads are; whereas if their

proceedings were published from week to week, much would be thought of those who do work of such moment, if indeed it were done well. And I fully believe, that the prejudices which now exist against the East India Company would have died off long ago, had the truth of the case been known—had the wisdom and good feeling which generally has prevailed, in their rule over India, not been hidden, as it is now, under a bushel. The Directors, then, would be short-sighted to stand in the way of this reform, and assuredly it would make for the good of India. Such publicity would at once be a sharp spur, and a strong check upon her rulers. It would stop carelessness; it would compel caution; it would enforce vigour. It would enlighten them, by the comments of the press, and by the application to the topics they handle, of the strong sense of the English people. To that English people, again, the opening of so grand a field of interest would be a first-rate boon.

This topic naturally suggests the question, what should be done with the Indian Press? At the present moment it is, as Mr. Norton says, not gagged, but garotted. No licence is given to any printing-press, European or native, without a stipulation that nothing shall be printed 'containing *any* observations impugning the motives or designs of the British Government,' or '*in any way* tending to weaken its lawful authority, or the lawful authority of its civil or military servants;' that is to say, not a word may be breathed against a single member of the civil or military service, from Lord Canning down to the lowest magistrate, nor against any proceeding whatever on the part of the rulers of India! The other stipulations are equally violent; and for any breach of them, any magistrate may inflict the punishment of a fine of 5000 rupees, imprisonment for two years, and the seizure of the entire stock-in-trade!

Now, it must be remembered that the members of the Supreme Council have long had a bitter grudge against the Indian press. Each individual of them has been assailed a thousand times, and the acts of the Council have been overhauled with bitter severity. I sincerely believe that an act of such needless severity as this would never have been passed by them had they not been urged on by a strong personal feeling against the newspapers.

Hitherto, however, this 'Gagging Act' has been warmly approved in England. A strong disposition has been felt to support the authorities in taking any measure, however strong, which might seem of use in such an awful crisis. But it is earnestly to be hoped that when the crisis is past this piece of despotism will be brought to an end. There is a stale com-

monplace in people's mouths, when the subject is alluded to, that our government in India is a military despotism, and therefore a free press is an absurd anomaly. Now, I deny utterly that our government of India is, or at any rate that it ought to be, a military despotism. Supported, no doubt, it is by bayonets; but it really is a paternal government, not treating the natives as conquered slaves, but as free men, whose co-operation is earnestly sought in the work of regenerating their country, and promoting civilization and prosperity. Of course, if we had conquered all India by the sword alone, and looked upon her denizens as merely subjugated enemies, then, indeed, our government might fairly be called a military despotism, and might dread the people's talk about its doings. This, however, is wholly contrary to the tenour of our rule. We have won our way by our justice and good feeling, quite as much as by the sword. The late outbreak has clearly shown that the people are not furious against us. In this position it will assuredly be for our interest to allow free thought and free speech. No doubt, of the free thought a great deal will be wrong thought, and of the free speech much will be foolish and much wicked. Still, in the long run, it is better to let bitterness 'run out in voice,' as South says. People lose their malignity by venting it. This is in reality far safer for the Government than any attempt (sure to be easily eluded) to silence the wrath of its subjects. Sudden, unlooked-for outbursts are much more likely where silence has been imposed. Moreover, it is said to be an essential part of our policy, by degrees to fit the natives for the administration of their fatherland. And certainly nothing tends so powerfully to form the mind of a nation—to interest it in public affairs—to kindle its patriotic feeling—and also to stimulate its desire for education, as the freedom of the press.

I would not, therefore, yield to the temptation (which it is impossible not to feel) to put even the native press under a rigid censorship, however seditious and false it may be. Such, we are told, is its character; but I confess I should like to hear the opinion of some one who had actually read native newspapers, for reports of that sort are passed on without examination, and are taken for gospel when perhaps they are gross exaggerations. It is mentioned (quite incidentally to another topic) in Mr. Norton's *Rebellion in India*, that 'the leading articles in the *Hindu Patriot* are written by a Brahmin, with a spirit, a degree of reflection and acuteness which would do honour to any journalism in the world.' May not some of the vernacular papers be equally creditable?

As to continuing to gag the English press in India, I am

persuaded that no far-sighted statesman would dream of such a thing. Nothing would so fatally impede all progress in that country as the stoppage of public discussion. Many scandalous and malignant articles may be written for the express purpose of damaging our government, but, upon the whole, the fullest publicity and the freest debate will do most even to clear the character of the administration. And the true way to silence liars is not to make everybody hold their tongues, but to let truth loose. The remedy suggested by 'Indophilus,' in his admirable letter on the Press, of Nov. 10, is assuredly the true one. Remove those restrictions which, with such a singular want of judgment, have been placed on the communication of information derived from official sources to the papers. The wisest, the best tempered, the best educated Europeans in India, as a general rule, are to be found in the Civil Service. It is madness to cut the Government off from the support which they would gladly render it if allowed to descend into the arena, armed with their official information.

M. de Valbezen, an impartial observer, after acknowledging the defects of the Indian press, continues:—

Si cette intervention continue de la presse Anglo-Indienne dans les choses militaires présente de véritables dangers, il faut reconnaître, d'un autre côté, que les abus de pouvoir, les scandales commerciaux sont devenus beaucoup moins fréquens depuis qu'une presse émancipée surveille dans l'Inde, d'un œil jaloux, les intérêts de tous. Il faut aussi ajouter que le zèle avec lequel les feuilles quotidiennes ont soutenu la cause des grands travaux d'utilité publique a beaucoup contribué à faire sortir le gouvernement de l'Inde de la honteuse léthargie dans laquelle il s'était endormi pendant près d'un siècle. Si de belles routes, des chemins de fer, des lignes de télégraphes électriques, d'admirables travaux d'irrigation commencent à couvrir le pays, la presse Anglo-Indienne peut s'attribuer une bonne part de ces améliorations.

In considering the means of imparting more vivacity to the Governors of India, there is one point of far greater consequence than it would seem at first sight; and that is, to let the Supreme Government reside in a fit locality. At present it sits at Calcutta, which, with an exquisite felicity of ill-luck, combines every conceivable disadvantage. It is one of the hottest places in the world; it stands on low ground; it is very far away from the hills; it is at the furthest possible distance from England; it is not central to India. Nay, it is not even central to Bengal.

The climate is a calamity of a most serious kind. Nothing, hardly, can be worse for the governed, than for their governors

to be excessively hot. Who can feel buoyant vigour, who can abound with mental energy, who can display a bold and resolute will, when he is in a constant state of perspiration? From tepid men come languid doings. But more than this. Calcutta is so unhealthy that the members of the Administration have to be off and on, repairing their health at Simla, or breaking down altogether. Now, business never goes merrily when it is driven one day by one man and the next by another. And if the Governor-General is constantly several hundred miles away from his subordinates, great delays and difficulties must and do arise.

But where, then, should the Governor-General and the Government take up their dwelling? On this many opinions may be formed. But certainly very powerful reasons have been alleged by Mr. Campbell in favour of the site which he recommends, of Mussoorie Deyrah, 7000 feet up in the Himalayas, due north of Delhi, between the Jumna and the Ganges.

The advantages of this site are—first, an invigorating, healthy climate, 'unquestionably the best yet discovered in India.' It abounds in water and vegetation. It could be made almost, perhaps altogether, impregnable, at a trifling cost, from the extraordinary nature of the ground. It overlooks the whole plain of Hindostan. It is close to the most important trunk road in India. A railway could be carried, at small expense, nearly up to it, alongside the Ganges Canal. The country and climate are so delightful that it would soon become a great social as well as political metropolis for the English in India. And this would tend to increase intelligence, and to facilitate the institution of a Deliberative Assembly. Communication with England would be made much more quickly than from Calcutta. Finally, Deyrah is better than Simla (which nearly rivals it), in being much less out of the way.

Scarcely anything would tend so much to energetic government in India, as the seating of it in cool and sparkling air. But while it would be well to apply this physical stimulus, a moral stimulus might be given at the same time, which would kindle the energies of all the men in high but subordinate office throughout India. Let it be henceforward understood that the grand prizes of Indian administration, the Governorships of the five provinces, and the General Governorship of India, will no longer be given to any chance peer whom the Home Government want to gratify, but *to the best men*—to the men who have shown the most transcendant force of character, and judgment, and sense in India herself. It surely

is a shameful thing — a scandalous, an iniquitous thing — a piece of toadyism for which we should blush, that where the comfort of tens of millions may really be affected by having a strong man at the helm, we, from no other imaginable motive than lord-worship, push aside men of illustrious talent, in favour of some commonplace peer.* I repeat, that in doing this we are not true to ourselves, or to our Indian subjects. We are bound, as much bound as to any duty in the world, to choose out men who know India, and who have *shown* that they are men of might—men born to command. And the knowledge that the display of first-rate ability might lead on, step by step, to the most splendid position—barring the Premiership —that an Englishman can attain, would give rare life to the Indian Civil Service.

And while we thus give an impulse to the civil administration, a reform of the army should go therewith, hand in hand. The system of seniority has much to be said for it; yet it is a vile system. It is a system which must inevitably suck the energy away from any service. In Lord Dalhousie's celebrated and most interesting minute, reviewing his administration, he states that he set aside the seniority principle, and 'declared that in making military appointments the governing principle should not be the rejection of no man unless he were notoriously and scandalously incapable, but rather the selection of no man unless he was confessedly capable and efficient.' This was an admirable reform—if it be acted upon. But it is just one of those matters in which it is far easier to be loose than tight.

Another reform in the army has been loudly called for. The number of officers with each native regiment must, it is said, be largely increased. I bow with all deference to the high authorities by whom this assertion has so emphatically been made. And no doubt, if we had more, and older and better officers present with the Sepoys, it might help to promote obedience. But there is no clear reason for thinking that this mutiny would have been prevented, or even mitigated, by such a state of things. I scarcely see where or how the flood of rebellion would have been thrust back by a larger number of officers. The Irregular regiments have been more faithful than any, yet they have much fewer European officers. General Jacobs tells us that 'qualifications, not numbers, are necessary for the leaders of native Indian soldiers. . . . . With thirty Europeans,

* I am not alluding to any living Governor.

instead of one, the native officer finds himself of no importance, and the Sepoy becomes a lifeless automaton.' It seems easy to imagine that where there are many officers they have less to do, and are more likely to sink into indolence or dissipation than where each one has a serious responsibility.

The complaint, however, that it grievously injures the army to have its officers drafted off to civil appointments, has great force, because this must inevitably destroy the military ambition of the officers, and relax their attachment to their profession, when the reward of talent is their withdrawal to other functions. It would be far better to have even a smaller number of officers, but let them continue as officers and nothing else, than to have on paper a considerable number, while in reality the most efficient of them are immersed in duties foreign to their natural career, and far away from the regiment to which they professedly belong.

But, granting that the proportion of officers to men is too small, and that hence a mutinous spirit has been permitted to arise, surely the conclusion to which these premises lead is the exact converse of that which is now preached up so loudly. The inference every one seems drawing is, that we must greatly enlarge the number of officers. Is not the true inference, that we must greatly reduce the number of men? It seems surprising that so obvious a conclusion from the events that have occurred should have been so little dwelt upon.* But is it not reasonable? Our army in India, when last reckoned up, consisted of 315,520 men. Between 1835 and 1850—only fifteen years—it was increased by 105,000 men, at an additional cost of four millions! Now, what was the object of this enormous force? Was it not almost entirely for the purpose of maintaining our authority in India itself?—for the purpose of keeping down insurrection? Undoubtedly. But since that we have made a discovery of immense importance. We have found out that ninety-nine hundredths of our peril lie in our army itself. We have learnt that, whether ill or well affected, the civilians do not venture to raise themselves up against the paw of the lion; and, what is of more consequence, those who conspire against us, do not take the trouble to set the mere mob at our heels—they at once tamper with the instrument of our security, and thus transfer from us to themselves an armed and trained soldiery, instead of having openly to form new levies against

* Since this was written, the able letters of 'Indophilus' have appeared, and I am glad to find him advocating the same cause, and the *Times* partially endorsing his views.

us. And observe that those oracular warnings that have been addressed to us by Sir C. Napier, Metcalfe, and others, have, without exception, referred to the likelihood of an outbreak of the *Sepoys*. No one intimately acquainted with India appears to have expected any more than a trifling local *émeute* now and then on the part of the populace. So far as security to our dominion goes, it would actually be enhanced by a very large reduction in the number of our native troops. And we have now no further conquests to make—all India is ours. If we are strong enough to repel insult and ward off attack, it is all we require. For these latter purposes fifty thousand English soldiers, supported by a hundred thousand natives, would probably be enough, especially now that the astonishing superiority of English over Oriental troops has shone forth so vividly. The incidents of the Persian war seemed marvellous enough, when the well-appointed and disciplined Persian troops, supported by good artillery, were driven like chaff before the wind by a tenth part of their numbers. But all of a piece with this have been the acts of our soldiers under Lawrence, Nicholson, Havelock, D'Oyley, Eyre, Neill, Wilson, Greathed, and others, in sweeping before them masses of men, in some cases actually twenty times as numerous as themselves, and that not mere hordes of barbarians, but soldiers who had been trained, and often led in battle by English officers, and who were supplied with all the munitions and implements of war. Do we not learn from this, that we need not look with any apprehension to the prospect of an invasion of our territories by our Oriental neighbours? No doubt we have some rough friends beyond the border, but all our experience proves that we could give them a reception they would not soon forget if they dared to fall on us. Of Russia I take no account. It has been demonstrated again and again, that no possible danger can really come from her, so long as England is true to herself. Surely, then, the necessity for the maintenance of so vast a standing army in India is a mere matter of imagination.

Nor would it, perhaps, be a great evil that our Government should not possess such extreme facilities of flying at the throat of our neighbours in the East at a moment's notice. This, no doubt, is not the popular feeling, which delights in a game-cock policy, and loves the stale and false paradox, that pugnacity tends to peace. Whereas, in reality, three wars out of four could be staved off if the stronger combatant were heartily set on avoiding them. No words could ever tell how much harm has been done to us and to the natives of India by our incessant wars. Doubtless, very fair excuses

may be made for most of them; but it is questionable whether those who hurried into them at the first excitement weighed the stupendous mass of ill and woe which was sure to follow in their train. I am not merely alluding to the personal suffering incurred in the actual campaign, but the ruinous drag they have been on the progress of the country, and thus on the happiness of those who dwell there.

'The welfare of the people of India,' observes Kaye, with the utmost truth, 'mainly depends on the preservation of peace. The finances of India have continually been in an embarrassed condition, because the Company have continually been, in spite of themselves, engaged in great and engulfing wars. . . . . So circumstanced, so impoverished, they cannot be generous—they can barely afford to be just. . . . . They are compelled to repress humane instincts and kindly impulses—to narrow enlarged schemes of policy, and to give themselves up to petty shifts and temporary expedients. . . . . It were well that it should be clearly understood how, at the bottom of all our misdoings and our shortcomings, is the miserable want of money. With an overflowing treasury, impure taxes might be remitted, and great public works might be completed. . . . . THE PAST HISTORY OF INDIA IS A HISTORY OF REVENUE WASTED AND DOMESTIC IMPROVEMENT OBSTRUCTED BY WAR. . . . . THE GOOD OR BAD GOVERNMENT OF INDIA IS MAINLY A QUESTION OF MONEY, AND THEREFORE A QUESTION OF WAR OR PEACE.'

For all these reasons, then, it would seem wiser to lessen our native troops than to increase our European ones, in order to keep up a safe proportion between them. And then we might give the indubitable superiority to the English soldiers by placing in their hands, not in those of the natives, the most powerful instruments of war. It is clear that henceforth the principal fortifications, the stores and munitions, but, above all, the whole of the field artillery, ought to be entrusted to English troops and to them alone. Obviously this is most frugal economy. You require a certain amount of European force in India. The factors of that force are soldiers and their arms. The more potent their arms, therefore, the fewer need the soldiers be. And since cannon will not die of cholera or fever, or require pensions or prisons, or food or tents, they are in the long run a far cheaper element of force than the strongest human flesh. Or, conversely, if each English soldier in India costs 50*l.* a-year, he ought to be put, when there, in possession of the most powerful implements, so that every hundred Englishmen there should wield a force, not $= 100x$, but $100x^3$; which may represent the difference between arming those hundred

men with 12-pounders, or with a rifle a-piece. However, there would no doubt be a limit, inasmuch as you must have English infantry and cavalry to lead the native line, as well as to support them with artillery. But, as far as it possibly can be done, it would be wise to make the costly and fragile English soldier as terrible as he can be made. Englishmen, firing grape, seem to form a combination which no Oriental, if indeed any human beings, can be found to resist.

But, after all, the one grand instrument of British dominion in India must be the Railway. The more this point is thought over, the more evidently does this appear as the queen of all military advantages—at any rate, where the chief work of an army is to maintain authority over a vast tract of country. A child can see that, in exact proportion as you increase the rapidity with which troops may be concentrated at any required point, so do you obtain the very same advantages which you might equally secure (but at incomparably greater cost) by keeping up a much larger army. If your troops could rush together from all points by electric telegraph, without one moment's delay, you need not keep up an army a twentieth part of the size, because at any instant an overwhelming body of men could be poured upon the rebels. On the other hand, if all communication were impossible, you must maintain at *every* point a force equivalent to that which might arise there against you. The more, then, we can advance from the latter to the former state of things, the more safely can a part of our standing army become dispensed with.

Every advantage, however, has some drawback; and in this case there is the risk of the railway being cut through. But if even a small number of troops were kept ready to start off at the very first report of an outbreak,* they would in all probability anticipate such an occurrence; and at any rate would be lifted perhaps some hundreds of miles on their way.

After all, frugality will be more needful now, than ever. If we do not cut our coat according to our cloth—if we run loosely into heavy debts and heavy taxation, advance will be impossible. No true statesman will join in the common outcry for bold and free expenditure. Yet our rule over India has somehow or other to be screwed down tighter, and this cannot be done without cost. The problem, then, which demands earnest

* It might be a good plan to keep a dozen field-pieces, with all their equipments, ready upon trucks at each of the central railway stations in India, with rooms overhead for the artillerymen.

thought is, *what kind* of outlay will do most towards that end? Since we must be very sparing of our millions—since we cannot throw them here and there too, we must look for the point where they will tell most. Now, upon the whole, is there any way in which money would do so much to insure our safety as if it were employed (in some form or other) for the promotion of railways? Remember how infinitely more is done in war, but, above all, in the suppression of revolt, by a bucket at first, than a well-full afterwards. Remember how much wear and tear is saved to our soldiers, in a hot climate especially, by sending them five hundred miles by rail instead of marching. Remember what great expense in escort duty would thus be saved. Mr. Campbell declares that a trunk line through the north of India would relieve us of duties which now occupy fifty regiments! Remember, further, how grand a lift a general extension of Indian railways would give to the commerce of the world—how greatly it would increase those true sinews of war, the pounds, shillings, and pence, in the pockets of the people. And, finally, remember that, although this would be military expenditure, as much for military objects as the building of fortifications, yet, in all human probability, every farthing so laid out would be amply repaid, in hard cash, besides and beyond all the security and all the wealth which such railways would bring in.

To turn from this to another matter. The idea has been started, that as we shall now, beyond doubt, sweep the last foul traces of the Mogul emperors from the world, the Queen should henceforth take the additional title of 'Empress of India.' I believe this would be politic. Why should not we, as a nation, carry the name of India among our national ornaments? It would, I fully believe, enhance our dignity both in Europe, the United States, and, above all, in the East, if the Queen were to bear that name. And I am disposed to conceive that it would in some degree help to attach the natives of that country to our throne. At present they, Orientals as they are, with all the Oriental appetite, as one may truly call it, for a king to bow to, have no one round whom that instinctive feeling can gather. The Queen of England is not their Queen: she is sovereign of their conquerors. John Company is not easily idealized into a Potentate. But if our Queen were familiarly known by a second title of Empress of India—if her head, with that inscription, appeared on their coins, the people would, in all probability, by degrees fall into the way of regarding her as that almost divine impersonation of power to whom the Eastern mind has always delighted to look up.

And, finally, comes the solemn question of retribution. The press, in general, has taken, what seems to me, the just view that the punishment of these fiends should be terrible. But I regret to see that great scorn has been cast upon those who take the side of mercy, and their humanity has been called sickly cant and other hard names. God forbid that we should speak lightly of that thoughtful reverence for human life, and tenderness for human suffering, which only dwells in noble natures, and which is happily a striking feature in the English character. At the same time this does appear to be a time for vengeance—for vengeance, calm, discriminating, but awful, as the vengeance of God. When we recall the unspeakable atrocities that have been wreaked upon men, women, and children, who had done nothing on earth to provoke them, one feels that such murder as this—murder so coldblooded, so treacherous, so atrocious—must have its fitting punishment meted out, and that death alone would be the fitting penalty for those who either bore a hand in its doing, or who allowed it to be done. Of course no skill could ever trace out each man who shed blood with his own hand, but every man who stood by and did not draw the sword against it, nay, every man who cast in his lot with those murderers, and joined himself to them, has become one with them, and might fairly swing from the same gallows.

But judgment must be tempered with mercy. Now is the time to show Christian self-control, and, while we know neither ruth nor pity towards those who did or permitted murder, we ought, if possible, to draw the line between them and those who simply mutinied, but let their officers get away scot free. When the mutineers are broken utterly, and fall into our hands—as large numbers surely will—on the former, be they twenty thousand, we ought to inflict no less a penalty than death; on the latter, imprisonment, or, at most, transportation. I cordially rejoice, therefore, in those directions of Lord Canning to the civil functionaries, which have called forth such a storm of indignation. The great fault found with them has been that they would hamper a General amid the exigencies of war. Whereas they were addressed to the civil officers, and to them alone. Not a word has been said by the Governor-General to interfere with the discretion of the military authorities.

We should further show that our sternness is tempered with gentleness, by the most sedulous painstaking to find out every man or woman throughout Bengal who has dealt kindly with our countrymen during these calamities. And on all such, rewards should be heaped as large and striking as the

penalties that should befal those, who turned against us in the day of our distress. We ought by no means to leave this to chance. India should be as much impressed by the intensity of our gratitude as by the severity of our justice. A commission, the statelier the better, should be sent through Bengal for the express purpose of discovering all who aided us, and giving them no mere paltry honour, but a reward that would make every other native wish he had done likewise. A medal has been suggested, and it would be wise to give one, but it should carry a pension on its back; and where a chief has given us support, he ought to feel that he has made a friend, first-rate in gratitude as in power.

Death to every Sepoy in India who did murder, or let his comrades do it; mercy to all who mutinied without shedding the blood of the innocent; ample reward to all who tried to save them. These are the three degrees of the justice we are bound to deal out. But, further, ought we not to mark out by some signal, some peculiar act of solemn vengeance, our abhorrence of the almost unique barbarities committed upon our women and children? I think we ought. I think the suggestion of the *Times*, that Delhi should be razed to the ground, is worthy of consideration. It may be well to show the nations of the East that to insult an Englishwoman is to stir up the whole might of the mightiest Empire on earth. And there is no more vivid way to do this than by the utter overthrow of Delhi, so long the seat of power in India. The more remarkable the associations that gather round it, the more striking would the example be, and the more powerfully should we impress upon the minds of all men in Hindostan that our dominion is paramount, and that of the Great Mogul indeed gone for ever. No doubt there are serious practical objections to such a course. 'Indophilus' pleads for Delhi as the head-quarters of Government. Its population is very large; what would become of them, when driven forth? How about compensation to the possessors of property? To the first of these difficulties we may reply that, although Delhi might present some advantages as the seat of government, they are not so great as to have induced Government to sit there; while to the two last I should say, that Delhi is a town conquered in war,—that almost any army, certainly any Oriental one, would be sure to lay it waste with fire and sword, and our care in saving the inhabitants, after all they did to our people, is quite as much as they have any right to expect. Let them take away their property and settle elsewhere, but the city where Englishwomen were dragged through the streets in a state of nudity, and then given up to the licentiousness of the vile

mob,—let that city, great and beautiful as it now is, no longer insult us by its existence. Be the cost, be the trouble, be the inconvenience what they may, we should never rest till of the scene of such atrocities it might be said, in the awful words of the Prophet, that—

'It shall never be inhabited, neither shall it be dwelt in from generation to generation: but wild beasts of the desert shall be there, and their houses shall be full of doleful creatures. The owl shall dwell there, and satyrs shall dance there. And the wild beasts of the islands shall cry in her desolate houses. And dragons in the pleasant palaces.'

The conclusions, then, which seem to issue from the facts before us, are these:—

1. The cartridges were the real cause of the mutiny.
2. This warns us that only by the strictest tolerance can our empire be preserved—a tolerance, however, which ought not to extend to religious cruelties, and which need not make us humour the pride of the Brahmins in our terms of enlistment.

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3. Our administration of India has had signal merits, but wants stimulus.
4. This impulse would be given, in the first place, by giving more power to the local authorities.
5. And again, by giving to each of the five great divisions of India a really independent government, in all matters of administration.
6. And again, by surrounding each Governor with a large Legislative Council, of experienced civil and military officers, assisted, perhaps, by selected natives.
7. But if not, then by combining the Court of Directors and the Board of Control, with large additions of retired Anglo-Indians, in a Council. Its deliberations to be public.
8. The seat of government should be in the hill country, not in Calcutta.
9. The Governorships, and Governor-Generalship, should be the prizes of the most distinguished ability displayed in India itself.
10. The freedom of the Indian press is, upon the whole, a good, not an evil.

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11. The seniority system in the army should be freely broken into.

12. The military officers should no longer be drafted off to civil appointments.

13. A better proportion must be kept between the European and native troops, but this rather by lessening the latter, than by increasing the former.

14. The artillery and forts should only be entrusted to Europeans.

15. No military expenditure would be so effective as that upon railways.

16. It might lead the natives to greater loyalty if the Queen were called Empress of India.

17. It is our duty, as a Christian country, to show forth equal energy of purpose, in our gratitude and in our vengeance.

C. B.

THE END.